



User's Manual

IP Telephony Gateway

Model No.: SP5001/S

<http://www.micronet.info>

Version 2.0

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About this User's Manual

This user's manual gives hardware specifications and explains web configuration and command line configuration for SP5001/S FXS Gateway.

Online Upgrade

Please refer to www.micronet.info for online Technical Support and additional support documentation.

General Syntax Conventions

- Mouse action sequences are denoted using a comma. For example, click start, Settings, Control Panel, Network means first you click Start, Click or move the mouse pointer over Settings the click or move the mouse pointer over Control Panel and finally click (or double-click) Network.
- "Enter" means for you to type one or more characters.
- Predefined choices are in **Bold Arial** Font.
- Button and field labels, links and screen names are in **Bold Times New Roman** font.
- A single keystroke is in Arial font and enclosed in square brackets. [Enter] means the Enter.
- For brevity's sake, we will use "e.g.," as shorthand for "for instance", and "i.e.," for "that is" or "in other words."

Related Documentation

- This user's guide provides hardware connection details and configuration and management instruction for managing SP5001/S.
- Please refer to www.micronet.info for an online Technical Support or Select Product VoIP Gateway download library for additional support documentation.

1. SP5001/S Overview

SP5001/S FXS Gateway which integrates data and voice in one device and is based on IETF RFC 2543 bis-09 compliance provides voice and fax over IP networks. Its simplified operation and configuration features are the most suitable for residential and SOHO application. Just an IP address and one phone set bring you to Voice over IP world.

1.1 Features of SP5001/S

Key Features

- IETF RFC 2543 bis-09 compliance
- 1AFXS: Four 10/100 Base-T Ethernet port
- Configuration interface: RS-232, TELNET and HTTP web management
- Transmit Voice and T.38 fax simultaneously
- Provides call progress tone
- E.164 Common Dial Plan
- DTMF Dialing
- Inband / Outband DTMF
- TFTP/FTP software upgrade
- Remote configuration/ reset
- LED indication for system status
- Support Static IP, DHCP and PPPoE
- Dimensions: 165(W) x 29(H) x 139 mm(D)
- Auto RJ-45 cross cable and straight cable switching

Audio feature

- Codec: G.711 a/μ-law, G.723.1 (6.3kbps), G.729A
- VAD (Voice Activity Detection)
- CNG (Comfort Noise Generate)
- G.168/165-compliant adaptive echo cancellation
- Dynamic Jitter Buffer
- Bad Frame Interpolation
- Voice/DTMF Gain Settings

Interface

- Four 10/100 Base-T Ethernet RJ45 ports (Auto LAN MDI/MDIX).
- One DB-9 RS232 COM Port.

- One RJ11 Telephone Port (FXS).
- DC 12V input.
- System Monitoring
- System status (Link, Ready, Status, TEL, Power).

Remote Firmware Upgrade

You can use FTP/TFTP to perform configuration backup/restore and firmware upgrade for SP5001/S from a remote location.

Security

Password protection for system management

1.2 Default Settings

The following are the settings of the default profile

- Login: root
- Password: Null (default)

1.2.1 IP Parameters

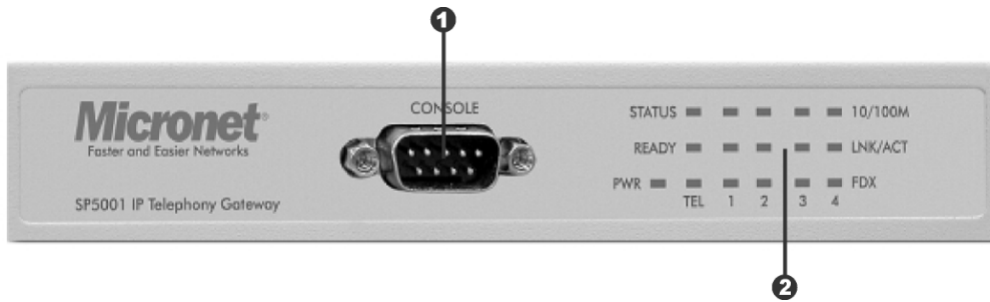
- IP Address = 10.1.1.3
- Subnet mask = 255.0.0.0
- Default gateway = 10.1.1.254

1.2.2 Telnet and Web Login Password

- Login = root
- Password = Null (default)

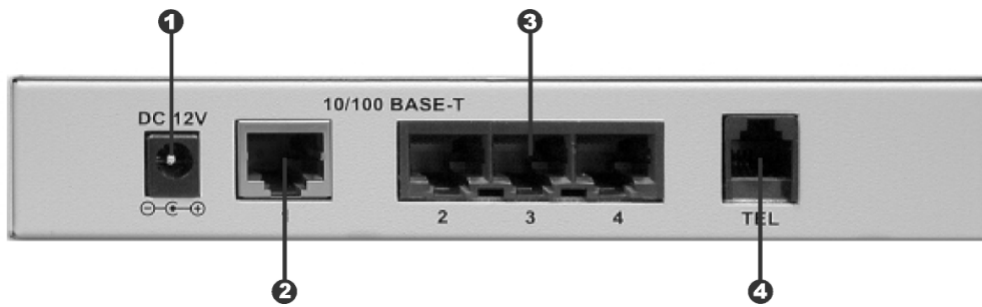
1.3 Front Panels

The LEDs on the front panel indicate the operational status of the Gateway.



(1) Console (2) LEDs Status

1.4 Back Panel



(1) Power (2) WAN RJ-45 (3) LAN RJ-45 (4) RJ-11

1.5 Hardware Specifications

These are the hardware details of SP5001/S.

1.5.1 SP5001/S LEDs

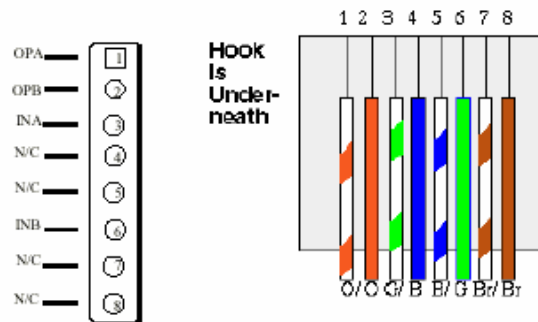
Table 1. SP5001/S LEDs Descriptions

LEDs	Functions	Status	Active	Description
PWR	Power	Green	On	The Power is on
			Off	The Power is off
TEL	TEL	Red	On	The Telephone is Off-Hook.
			Off	The Telephone is On-Hook.
READY	Ready	Green	Slow Blinking	Normal mode.
			Fast Blinking	Downloading mode.
STATUS	Status	Green	On	Proxy mode and has registered to Proxy server successfully
			Blinking	Proxy mode and has not yet registered to Proxy server. Downloading mode.
			Off	Peer-to-Peer Mode.
ACT/LNK	LAN	Green	On	Ethernet connection has been established
			Blinking	Ethernet data is being transmitted / received.
			Off	No connection
100/10	LAN	Green	On	The 100M LAN is connected.
			Off	The 10M LAN is connected.
FDX	Full / Half	Green	On	Transmitting mode is full duplex.
			Off	Transmitting mode is half duplex.

1.5.2 Back Panel Port

Ethernet Port:

Ethernet port is for connecting SP5001 to network, transmit rate supports 10/100 Base-T.

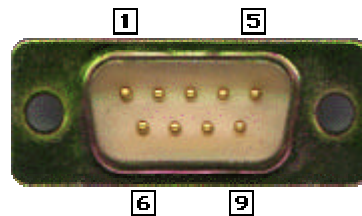


Ethernet connector (LAN)

COM Port:

RS232 console port (DB-9pin male connector)

Note: use straightforward cable to connect to your computer.



PINOUPS

Pin	Name	Dir	Description
2	RXD	←	Receive Data
3	TXD	→	Transmit Data
5	GND	—	System Ground

TEL Port:

RJ-11 connector, FXS interface. To connect analog phone sets or trunk line of PABX.

12V DC Port:

DC Power supply.

1.5.3 Back Panel Connections

This section outlines how to connect your SP5001/S to the LAN and the WAN. In the case of connecting a Cable Modem you must connect the coaxial cable from your cable service to the threaded coaxial cable connect on the back of the cable modem.

Step 1. Connecting the Console Port

For the initial configuration of your SP5001/S, you need to use terminal emulator software on a workstation and connect it to the console port of SP5001/S. Connect the 9-pin end of the console cable to the console port of SP5001/S and the other end to a serial port (COM1, COM2 or other COM port) of your workstation. You can use an extension RS-232 cable if the enclosed one is too short. After the initial setup, you can modify the configuration remotely through telnet connections.

Step 2. Connecting SP5001/S to WAN

Connect the WAN port (silver) on SP5001/S to the Ethernet port on the cable modem using the cable that came with your cable modem. The Ethernet port on the cable modem is sometimes labeled “PC” or “Workstation”.

Step 3. Connecting PC to LAN

If you have more than one PC, you must use an external hub. Connect the 10/100M LAN Port (gold) on SP5001/S to a port on the hub using a straight through Ethernet cable. If you only have one PC, you can connect SP5001/S to the PC directly without a hub. For a single PC, connect the 10/100M LAN port on SP5001/S to the Network Adapter on the PC using a crossover cable (red tag).

Step 4. Connecting the Power Adapter to your SP5001/S

Connect the power adapter to the port labeled POWER on the rear panel of SP5001/S.

Caution: To prevent damage to SP5001/S, first make sure you have the correct AC power adapter. Please see the Appendices for AC power adapter specifications for your region.

Step 5. Grounding SP5001/S

If you want to ground SP5001/S then connect a grounded wire to the F.G. (Frame Ground) of SP5001/S.

1.6 Additional Installation Requirements

In addition to the contents of your package, there are other hardware and software requirements you need before you can install and use your SP5001/S. These requirements include:

1. A computer with an Ethernet NIC (Network Interface Card) installed.
2. A computer equipped with communications software configured to the following parameters:
 - VT100 terminal emulation.
 - 9600 Baud.
 - No parity, 8 Data bits, 1 stop bit, Flow Control set to None.
3. Use Internet Explorer 5.5 and later or Netscape Navigator 6 and later versions.

After SP5001/S is properly set up, you can make future changes to the configuration through telnet connections.

1.7 Setting Up the TCP/IP Protocol

If you are not sure whether the TCP/IP Protocol has been installed, follow these setups to check, and if necessary, install TCP/IP onto your PCs.

Step 1. Click the “Start” button, Choose “Settings”, then “Control Panel”. Double-click the “Network” icon. Your Network window should appear as follows.

Step 2. Select the “Configuration” tab.

Note:

For Windows 2000 & Windows XP Setting, you will find that they differ with Windows 98/ME/NT slightly. See the Following for reference.

Click the “Local Area Connection” icon on the lower right hand side of your desktop screen.

In the “Local Area Connection Status” windows, click the “Properties” button, and then your Network windows will appear.

There is only one tab, “General”, in the Network window.

- Step 3.** Click whether the TCP/IP Protocol has already been installed onto your computer's Ethernet card. Note that TCP/IP Protocol can be installed for a computer's Dial-Up Adapter as well as for the Ethernet card.
- If yes, go to set 7.
 - If no, click the "Add" button
- Step 4.** Double-click "Protocol" in the Select Network Component Type or highlight "Protocol" then click "Add".
- Step 5.** Highlight "Microsoft" under the list of manufacturers.
- Step 6.** After a new second, you will be returned to the Network window. The TCP/IP Protocol should now be on the list of installed network components.
- Step 7.** Click the "Properties" button. The TCP/IP Properties windows consist of several tabs. Choose the "IP Address" tab.
- Step 8.** Select "Specify an IP Address" and enter "10.1.1.1" in the "IP Address" location (where xxx is a number between 2 and 254 used by SP5001/S to identify each computer), and the default "Subnet Mask" 255.0.0.0". Note than no two computers on the same LAN can have the same IP address.
- Step 9.** Click on the "DNS Configuration" tab and select "Enable DNS". Then click the "Add" button.
- Step 10.** Click on the "Gateway" tab and enter the default gateway value 10.1.1.254 in the "new gateway" field, then click "Add" Button.
- Step 11.** Click "OK". Restart your PC to complete the TCP/IP installation.

1.8 Power Up Your SP5001/S

At this point, you should have connected the console port, the LAN Port, the WAN port and the power port to the appropriate devices or lines. Plug the power adapter into a wall outlet. The Power LED should be on. The Status LED will come on after the system tests are complete. The WAN LED and one of the LAN LEDs come on immediately after the Status LED come on, if connections have been made to the LAN and WAN ports.

2. Web Configuration with FXS Introduction

2.1 Accessing the Web Configuration

The embedded web configuration allows you to use a web browser to manage SP5001/S.

You will need a computer with and Ethernet 10BaseT, 100Base-TX Network Interface Card (NIC). Connect to the LAN port in the FXS.

Use Internet Explorer 5.5 and later or Netscape Navigator 6 and later versions.

Use the following instructions to login on to the web configuration.

- Step 1.** Start your web browser.
- Step 2.** Launch your web browser and enter “10.1.1.3” (the default IP address of SP5001/S) in the Location or Address field. Press Enter.
- Step 3.** The Password screen now appears. Type “root” in the user name field (it may display automatically for you) and your password (default “Null”) in the password field.
- Step 4.** Click OK.

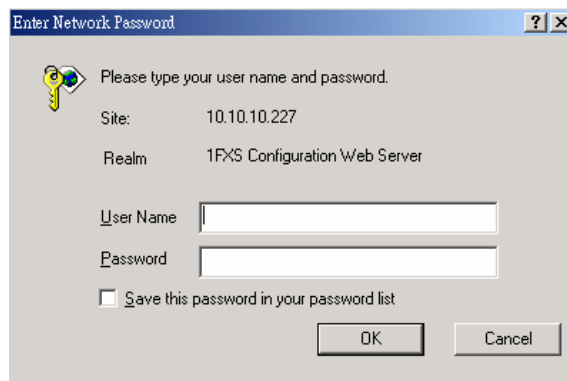


Figure 1. Login Screen

- Step 5.** After a successful login, you will see the welcome screen show next.

2.2 Welcome Screen

This is the web configuration welcome screen. Click a link on the navigation panel to go to the corresponding screen.



Figure 2. SP5001/S web configuration welcome screen

The following table describes the screen.

Table 2. Navigation Panel Links

LABEL	DESCRIPTION
Network Interface	This link takes you to a screen where you can configure SP5001/S Network Interface Information.
SIP Information	This link takes you to a screen where you can setup up SIP Information.
System Configuration	This link takes you to a screen where you can set up System Configuration.
Voice Setting	This link takes you to a screen where you can set up Voice Configuration.
Phone Pattern	This link takes you to a screen where you can set up Phone Pattern Configuration.
Support Function	This link takes you to a screen where you can set up Support Functions Configuration.
Phone Book	This link takes you to a screen where you can set up Phone Book Information.
DSCP Configuration	This link takes you to a screen where you can set up DSCP Configuration.
Password	This link takes you to a screen where you can change passwords.
ROM Upgrade	This link takes you to a screen where you can change ROM Upgrade configuration.

LABEL	DESCRIPTION
Flash Clean	This link takes you to a screen where you can click flash memory information and configuration.
Commit Data	This link takes you to a screen where you can click save your changes to the non-volatile memory.
Reboot System	This link takes you to a screen where you can click to reboot SP5001/S.

2.3 Saving Your Configuration

Click OK to save your changes back to volatile memory. SP5001/S loses these changes if it is turned off or loses power, so use the Commit Data link on the navigation panel to the left to save your changes to the non-volatile memory when your are done configuring.

2.4 Navigating the Web Configuration

The web configuration uses one level. For example, to configure Network Interface, click the link on the navigation panel to open the configuration screen.

The screenshot shows the 'Network Interface' configuration screen. On the left is a navigation menu with links for Network Interface, SIP Information, System Configuration, Voice Setting, Phone Pattern, Support Function, Phone Book, DSCP Configuration, Password, and ROM Configuration. The main area contains the following configuration fields:

Network Interface	
IP Address:	192 . 168 . 4 . 74
Subnet Mask:	255 . 255 . 0 . 0
Default routing gateway:	192 . 168 . 1 . 254
DHCP:	<input checked="" type="radio"/> enable <input type="radio"/> disable
SNMP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
SNMP Server Address:	168 . 95 . 195 . 12
GMT:	8
IP Sharing:	<input type="radio"/> enable <input checked="" type="radio"/> disable
UPnP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
IP Sharing Server Address:	210 . 59 . 163 . 198
Primary DNS Server:	168 . 95 . 1 . 1
Secondary DNS Server:	168 . 95 . 1 . 1

An 'OK' button is located at the bottom center of the configuration area.

Figure 3. Network Interface Screen

3. Initial Configuration

This chapter describes the procedure for the initial configuration of SP5001/S. Refer to the relevant chapters in this User's Manual for descriptions of the fields and buttons within individual screens.

3.1 General Configuration

SP5001/S has a factory default IP address of 10.1.1.3 and a subnet mask of 255.0.0.0.

3.2 Static IP address

Step 1. To configure the IP address of SP5001/S, click Network Interface on the navigation panel. In the Network Interface screen, type a new IP address, subnet mask and the default routing gateway (e.g. IP Address: 192.168.4.71, Subnet mask: 255.255.0.0, Default routing gateway: 192.168.1.254) and click the OK button.

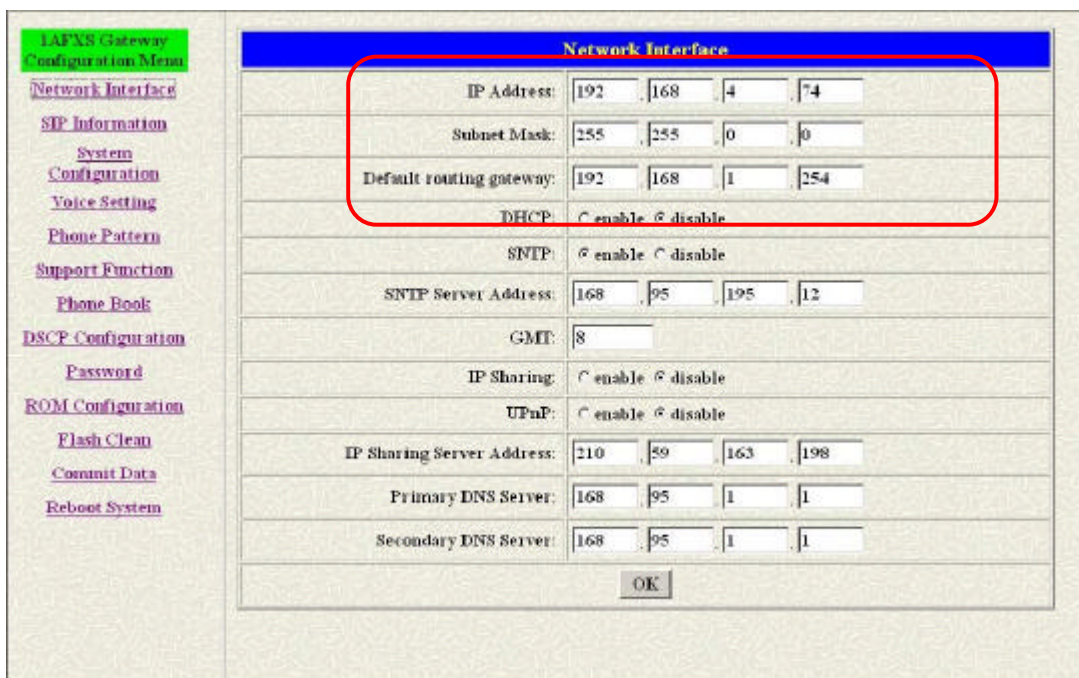


Figure 4. Network Interface

Step 2. Click Commit Data on the navigation panel. In the Commit Configuration Data screen, click the Commit button. In the Commit Configuration Data screen to Display Commit to Flash OK!, When the Commit Data Ok.

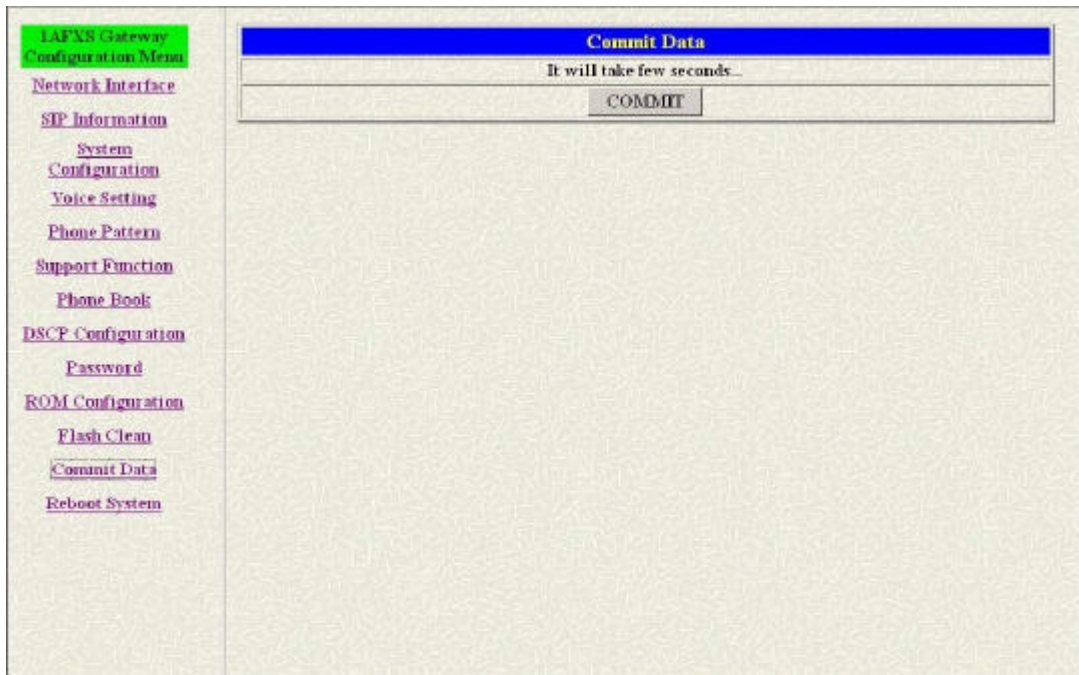


Figure 5. Commit Data

Step 3. Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.

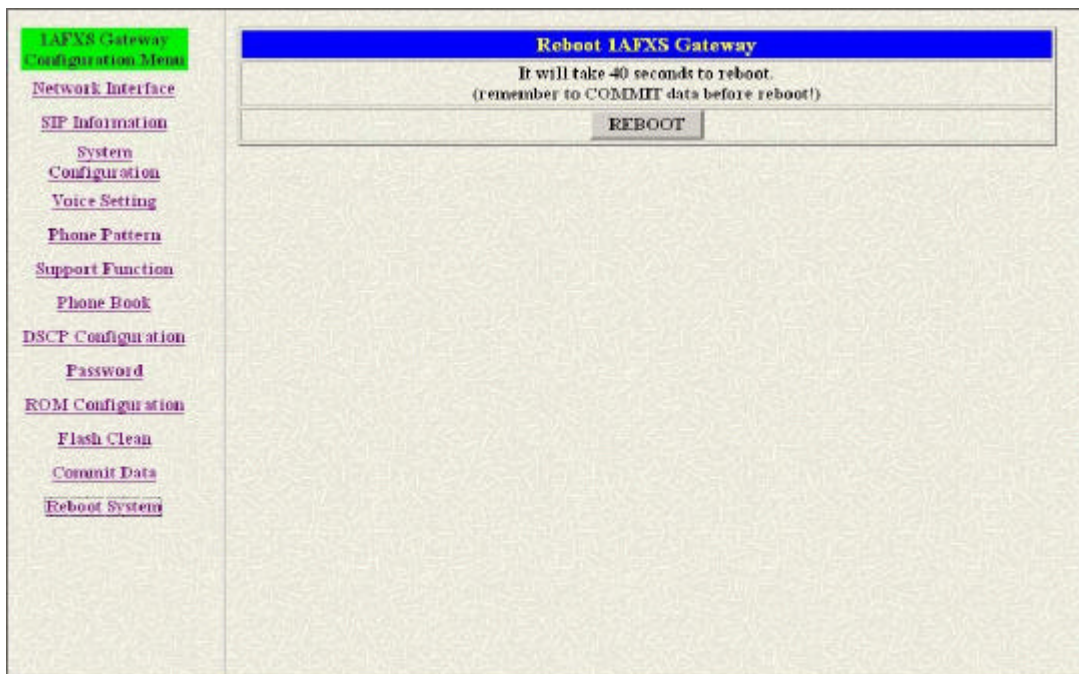


Figure 6. Reboot FXS System

Step 4. Close the current browser windows and launch your web browser again. Enter the new IP address in the Location or Address field. Press [Enter].

3.3 DHCP mode

Step 1. To configuration the IP address of SP5001/S for DHCP Mode, click Network Interface on the navigation panel. In the Network Interface screen, enable the DHCP function if you are using the cable modem or DHCP server and click the OK button.

Network Interface	
IP Address:	192 . 168 . 4 . 74
Subnet Mask:	255 . 255 . 0 . 0
Default routing gateway:	192 . 168 . 1 . 254
DHCP:	<input checked="" type="radio"/> enable <input type="radio"/> disable
SNTP:	<input type="radio"/> enable <input type="radio"/> disable
SNTP Server Address:	168 . 95 . 195 . 12
GMT:	8
IP Sharing:	<input type="radio"/> enable <input checked="" type="radio"/> disable
UPnP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
IP Sharing Server Address:	210 . 59 . 163 . 198
Primary DNS Server:	168 . 95 . 1 . 1
Secondary DNS Server:	168 . 95 . 1 . 1
<input type="button" value="OK"/>	

Figure 7. Network Interface

Step 2. Click Commit Data on the navigation panel. In the Commit Data screen, click the Commit button.

Step 3. Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.

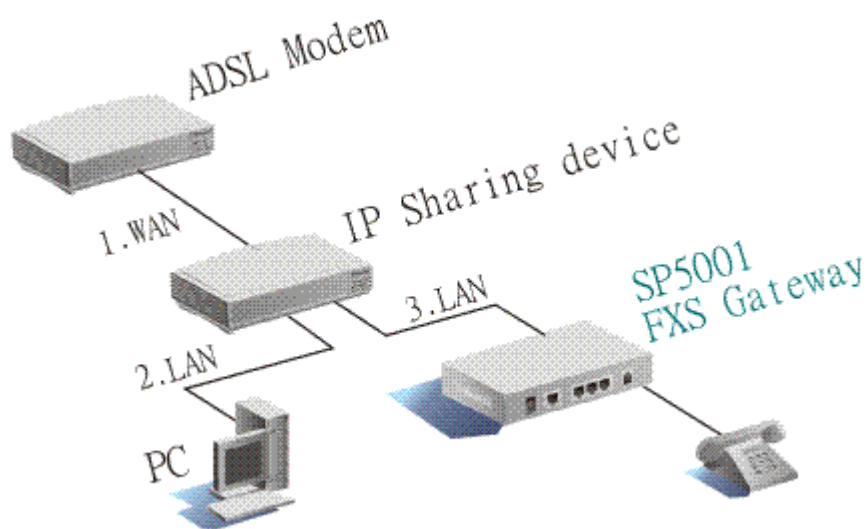
Step 4. Close the current browser windows and launch your web browser again. Enter the new IP address in the Location or Address field. Press [Enter].

3.4 IP Sharing Configuration

One Sets SP5001/S

The function is for user whose network environment is behind IP Sharing device. It is said SP5001/S is connected to the IP Sharing device (Router).

An example such ADSL network is like the following.



The WAN IP Address obtained from ADSL has two kinds of methods. One is fixed IP Address, while user applies for one or more fixed IP Addresses. Another is dynamic IP Address while user applies for dial-up connection way.

The LAN IP Address of User' s PC can be set as DHCP client in order to gain a valid one. One can also assign a fixed IP address, which belongs to the same network segment as the LAN interface of IP Shari ng device.

SP5001/S must enable the IP Sharing function for the fixed / dynamic WAN IP Address.

Fixed IP Address – `usr/config$ ifaddr -ipsharing 1 210.11.22.33`

Note: With Dynamic WAN IP Address, when the WAN IP is changed, we need to change the external IP of SP5001/S using above command.

IP Sharing device must have a function to do IP/Port mapping. Some is named as DMZ, some is named as virtual server whatever. The VoIP message from WAN has to completely pass forward to the LAN. It is said if SP5001/S is assigned a virtual fixed IP Address such as 192.168.1.5, IP Sharing device must forward the VoIP message to 192.168.1.5.

Please see following for example:

>Advanced setting > NAT setting > DMZ Host setting

DMZ Host setting

Activate DMZ

DMZ Host IP : . . .

- Step 1.** To configuration the IP address of SP5001/S for IP Sharing Mode, click Network Interface on the navigation panel. In the Network Interface screen, enter the IP address, Subnet mask and the default gateway in the network table. Please follow up your IP Sharing device
- Step 2.** Enable the IP sharing function and put the static IP address in the IP Sharing server address (e.g. 210.11.22.33) and click the OK button.

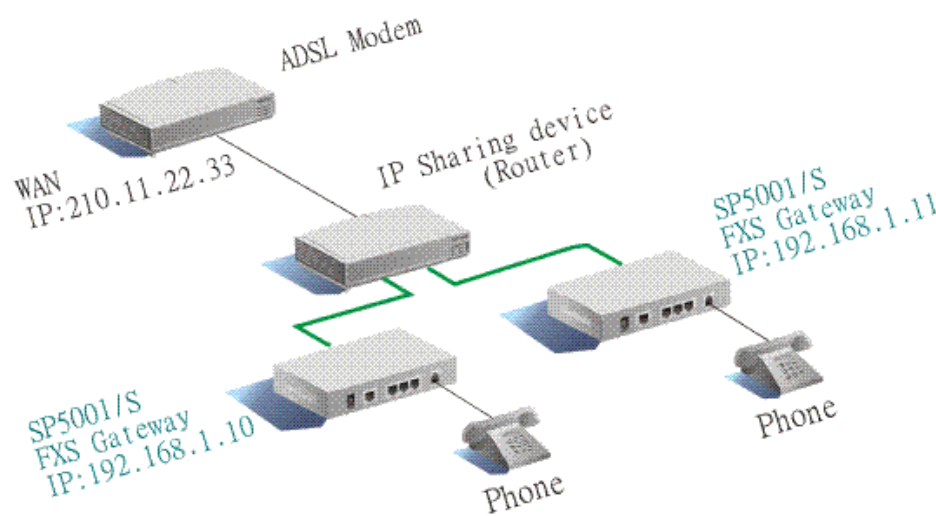
The screenshot shows the 'Network Interface' configuration page. The 'IP Sharing' option is checked and highlighted with a red box. The 'IP Sharing Server Address' is set to 210.11.22.33. Other settings include IP Address (192.168.4.74), Subnet Mask (255.255.0.0), Default routing gateway (192.168.1.254), DHCP (disabled), SNTP (disabled), SNTP Server Address (168.95.195.12), GMT (8), UPnP (disabled), Primary DNS Server (168.95.1.1), and Secondary DNS Server (168.95.1.1). An OK button is at the bottom.

Network Interface	
IP Address:	<input type="text" value="192"/> . <input type="text" value="168"/> . <input type="text" value="4"/> . <input type="text" value="74"/>
Subnet Mask:	<input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="0"/> . <input type="text" value="0"/>
Default routing gateway:	<input type="text" value="192"/> . <input type="text" value="168"/> . <input type="text" value="1"/> . <input type="text" value="254"/>
DHCP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
SNTP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
SNTP Server Address:	<input type="text" value="168"/> . <input type="text" value="95"/> . <input type="text" value="195"/> . <input type="text" value="12"/>
GMT:	<input type="text" value="8"/>
IP Sharing:	<input checked="" type="radio"/> enable <input type="radio"/> disable
UPnP:	<input type="radio"/> enable <input checked="" type="radio"/> disable
IP Sharing Server Address:	<input type="text" value="210"/> . <input type="text" value="11"/> . <input type="text" value="22"/> . <input type="text" value="33"/>
Primary DNS Server:	<input type="text" value="168"/> . <input type="text" value="95"/> . <input type="text" value="1"/> . <input type="text" value="1"/>
Secondary DNS Server:	<input type="text" value="168"/> . <input type="text" value="95"/> . <input type="text" value="1"/> . <input type="text" value="1"/>
<input type="button" value="OK"/>	

Figure 8. Enable the IP sharing function

- Step 3.** Click Commit Data on the navigation panel. In the Commit Data screen, click the Commit button. In the Commit Data screen to Display Commit to Flash OK! when the Commit Data Ok.
- Step 4.** Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.
- Step 5.** Close the current browser windows and launch your web browser again. Enter the new IP address in the Location or Address field. Press [Enter].

Two sets attached to IP Sharing Device (Router)



Assign an IP address to each set using DHCP or fixed address.

Enable the IP Sharing function for each set using following command.

Fixed IP Address – `usr/config$ ifaddr -ipsharing 1 210.11.22.33`

Configure separate SIP port and RTP port for each set to prevent from port conflict. For example, if set A uses the default settings (SIP port: 5060, RTP port: 16384), you must change set B' s setting to SIP port equal to 5061 and RTP port equal to 26384 for instance.

Change SIP port – `usr/config$sip -port 5061`

Change RTP port– `usr/config$sip -rtp 26384`

Use the Port Forwarding or Port Redirection function provided by IP Sharing device (Router).

See following for example.

>Advanced setting > NAT setting > Port Redirection						
Active Configuration						
Items	Service name	Protocol	Actual Port	Virtual IP	Virtual Port	Enable
1	1	UDP	5060	192.168.1.10	5060	v
2	2	UDP	16384	192.168.1.10	16384	v
3	3	UDP	16394	192.168.1.10	16394	v
4	4	UDP	5061	192.168.1.11	5061	v
5	5	UDP	26384	192.168.1.11	26384	v
6	6	UDP	26394	192.168.1.11	26394	v
7		---	0		0	x
8		---	0		0	x
9		---	0		0	x
10		---	0		0	x

Note:

Different Vendor' s Router will have different appearance of setting.

Once you set the DMZ Host, you don' t need to configure the Port Forwarding and vice versa.

If there is only one SP5001/S attached to the IP Sharing device, it is recommended to use DMZ Host setting to enable the NAT traverse and disable the Port Forwarding.

If there are two or more sets of SP5001/S attached to the IP-Sharing device, please configure the Port Redirection (Forwarding) to enable the NAT traverse and disable

the DMZ Host.

After the IP Sharing configuration of SP5001/S and IP Sharing device is complete, you must reboot SP5001/S to activate the new settings

4. Making a VoIP Call

This Chapter covers the basic configuration the gateway for making VoIP calls. One is the Peer-to-Peer mode, another is Proxy routed mode. The configurations and functions are different. Please make sure about the mode you want and follow up the step to configure your gateway.

4.1 Configure the gateway into the Peer-to-Peer mode

Step 1. To Configuration the SIP Configuration of SP5001/S, click SIP Information on the navigation panel. In the SIP Information screen, select Peer-to-Peer Mode function, set line number (e.g. Line1 Number: 60927) and click the OK button.

SIP Configuration	
Run Mode:	<input checked="" type="radio"/> Peer-2-Peer <input type="radio"/> Proxy
Proxy IP Address:	192.168.4.192
Proxy port:	5060
Domain:	null
Prefix String:	null
Line1 Number:	60927
Line1 Account:	60927
Line1 Password:	609
SIP port:	5060
RTP Port:	16384
Expire:	3600
<input type="button" value="OK"/>	

Figure 9. SIP Configuration – Peer to Peer mode Screen

Step 2. To configuration the Phone Book of SP5001/S, click Phone Book on the navigation panel. In the Phone Book screen, enter the Index, Name, IP address and e164 (phone number) of the destination and click the Add Data button.

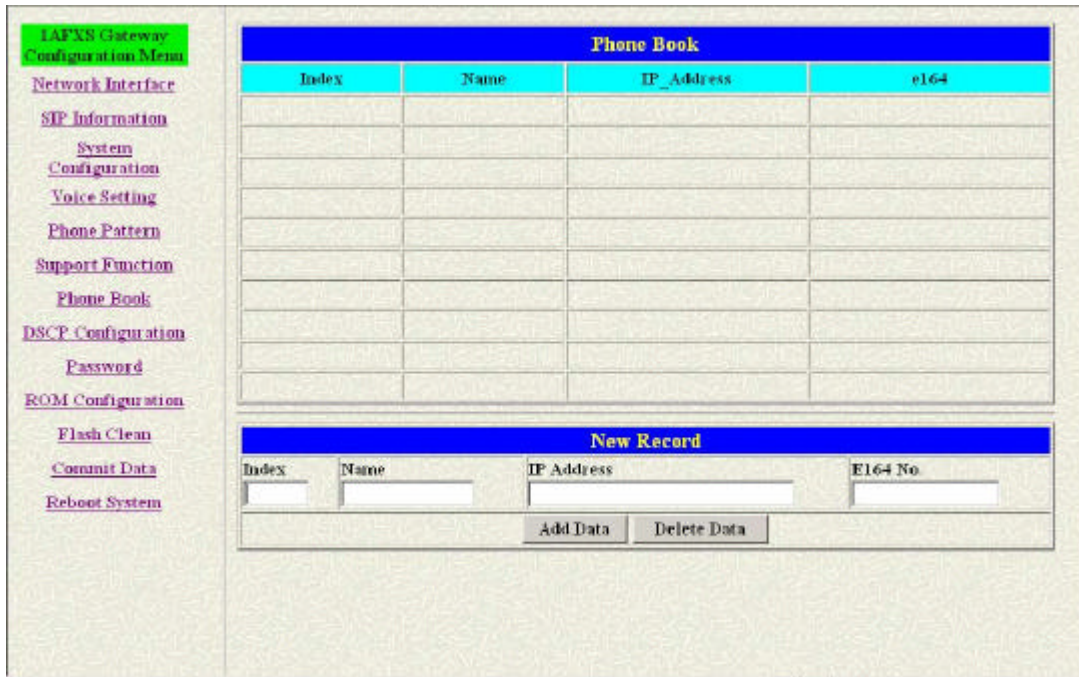


Figure 10. Phone Book

Step 3. E.g. enter the Index: 1, Name: test1, IP address: 192.168.4.72 and e164: 200 of the destination and click the Add Data button.

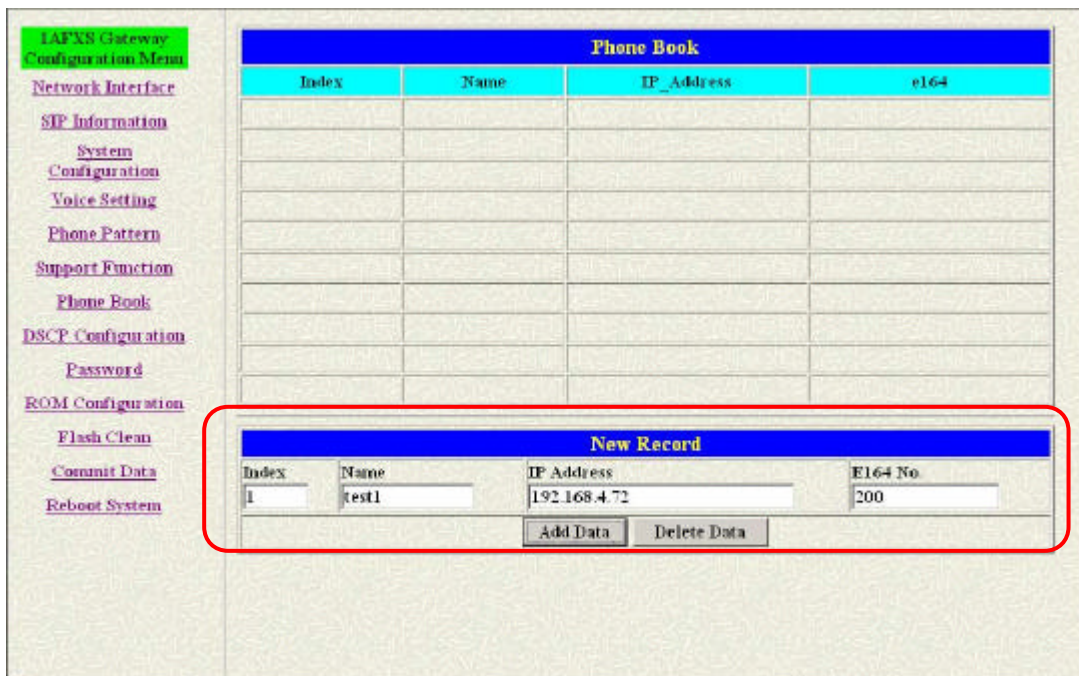


Figure 11. Phone Book – New Record

Step 4. On table will display on the first index.

The screenshot displays the IAXS Gateway Configuration Menu on the left, with the 'Phone Book' option selected. The main area shows a table titled 'Phone Book' with the following data:

Index	Name	IP_Address	e164
1	test1	192.168.4.72	200

Below the table is a 'New Record' form with the following fields and buttons:

Index	Name	IP Address	E164 No.
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Buttons: Add Data, Delete Data

Figure 12. Phone Book

Step 5. Click Commit Data on the navigation panel. In the Commit Data screen, click the Commit button.

Step 6. Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.

4.2 Configure the gateway into the Proxy routed mode

- Step 1.** To configuration the SIP Configuration of SP5001/S, click SIP Information on the navigation panel. In the SIP Information screen, select Proxy routed Mode function.
- Step 2.** To change the SIP information from your service provider Proxy IP Address, Line1 Number, Lin1 Account, Line1 Password, (e.g. Proxy IP Address: 192.168.4.192, (e.g. Line1 Number: 60921, Line1 Account: 60921, Line1 Password: 609), and click the OK button.

The screenshot shows the 'SIP Configuration' screen in the IAFNS Gateway Configuration Menu. The 'Run Mode' is set to 'Proxy'. The 'Proxy IP Address' field is highlighted with a red oval and contains the value '192.168.4.192'. Other fields include 'Proxy port' (5060), 'Domain' (null), 'Prefix String' (null), 'Line1 Number' (60921), 'Line1 Account' (60921), 'Line1 Password' (609), 'SIP port' (5060), 'RTP Port' (16384), and 'Expires' (3600). An 'OK' button is visible at the bottom.

SIP Configuration	
Run Mode:	<input type="radio"/> Peer-2-Peer <input checked="" type="radio"/> Proxy
Proxy IP Address:	<input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="4"/> <input type="text" value="192"/>
Proxy port:	<input type="text" value="5060"/>
Domain:	<input type="text" value="null"/>
Prefix String:	<input type="text" value="null"/>
Line1 Number:	<input type="text" value="60921"/>
Line1 Account:	<input type="text" value="60921"/>
Line1 Password:	<input type="text" value="609"/>
SIP port:	<input type="text" value="5060"/>
RTP Port:	<input type="text" value="16384"/>
Expires:	<input type="text" value="3600"/>
<input type="button" value="OK"/>	

Figure 13. Configure the Proxy Information

- Step 3.** Click Commit Data on the navigation panel. In the Commit Data screen, click the Commit button. In the Commit Data screen to Display Commit to Flash OK! when the Commit Data Ok.
- Step 4.** Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.

5. Upgrade ROM Version

This Chapter covers the basics of how to upgrade ROM Version.

5.1 Before you start downloading

1. Please confirm Host PC, which is installed as TFTP / FTP server, and device are in available network.
2. Remember the current configuration, such as [pbook], [SIP].

5.2 Update Application Version

- Step 1.** Update the ROM Version of SP5001/S. Click ROM Configuration on the navigation panel. In the ROM Configuration screen, type a Server IP address, Target File Name, Method, Target File Type (e.g. Server IP Address: 192.168.4.70, Target File Name: 4asipfxs.105, Method: TFTP, Target File Type: Application image) and click the OK button.

ROM Configuration	
FTP/TFTP server IP Address:	192 . 168 . 4 . 71
Target File name:	4asipfxs.105
Method:	TFTP
FTP Login:	name passwd
Target File Type:	Application Image
OK	

Figure 14. ROM Configuration

- Step 2.** In the screen to Display please issue FLASH CLEAN to consist software version when the ROM Upgrade is ok.



Figure 15. ROM File Upgrade OK

- Step 3.** Click Flash Clean on the navigation panel. In the Flash Clean screen, click the CLEAN button. In the Flash Clean screen to Display Flash cleaned!! Please reboot your system!! when the Flash Clean Ok.

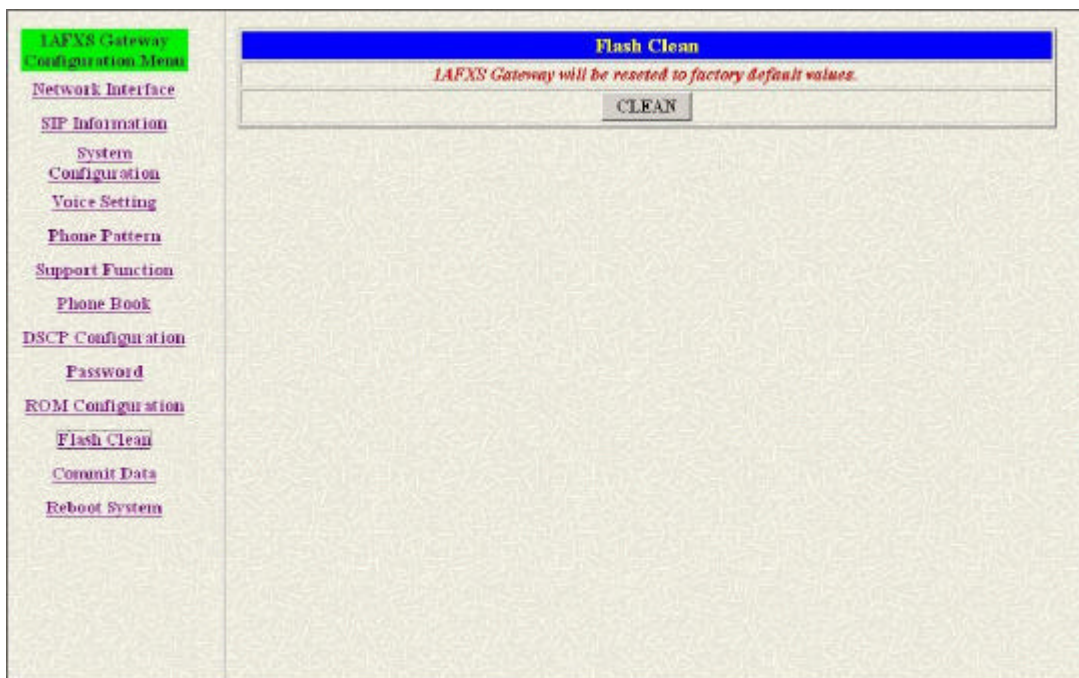


Figure 16. Flash Clean

- Step 4.** Click Reboot Data on the navigation panel. In the Reboot FXS System screen, click the Reboot button. It will take 40 seconds to reboot.
- Step 5.** Close the current browser windows and launch your web browser again. Enter the IP address in the Location or Address field. Press [Enter].

6. Network Interface Screen

Click Network Interface in the navigation panel and open the Network Interface Screen.

Use this screen to setup Network Interface identification information for SP5001/S.

Figure 17. Network Interface

The following table describes this screen.

Table 3. H323 Configuration

LABEL	DESCRIPTION
IP Address	Enter the IP Address of SP5001/S in dotted decimal notation for e.g. 192.168.4.92. Range of IP Address setting (0.0.0.0~255.255.55.255).
Subnet Mask	Enter the IP Subnet Mask of your SP5001/S in dotted decimal notation for e.g. 255.255.0.0.
Default Routing Gateway	Enter the IP Address of the default-outgoing gateway of your SP5001/S in dotted decimal notation for e.g. 192.168.1.254.
DHCP	Select enable/disable Dynamic Host Configuration.
DNS primary	Enter the DNS IP Address in dotted decimal notation for e.g. 168.95.1.1
DNS Secondary	Enter the DNS secondary IP Address in dotted decimal notation for e.g. 168.95.1.1
SNTP	Select enable/disable Simple Network Time Protocol.

LABEL	DESCRIPTION
SNTP Server Address	Set specify a SNTP Server as network time source in dotted decimal notation for e.g. 168.95.192.12.
GMT	Set local time zone according to GMT e.g. 8.
IP Sharing	Select enable IP Sharing function, when you specify usage of and IP Sharing device.
UPnP	Select enable/disable UPnP function.
IP Sharing Server Address	Enter specify a global fixed IP Address, user can add this IP Address in dotted decimal notation for e.g. 210.11.22.33.
Primary DNS primary	Display the DNS IP Address in dotted decimal notation for e.g. 168.95.1.1
Secondary DNS Secondary	Display the DNS secondary IP Address in dotted decimal notation for e.g. 168.95.1.1
OK	Click OK to save your changes back to volatile memory.

7. SIP Information Screen

Click SIP Configuration in the navigation panel and open the SIP Information Screen.

The screenshot shows the 'SIP Configuration' screen. On the left is a navigation menu with options like 'Network Interface', 'SIP Information', 'System Configuration', etc. The main area contains the following configuration fields:

- Run Mode: Peer-2-Peer Proxy
- Proxy IP Address:
- Proxy port:
- Domain:
- Prefix String:
- Line1 Number:
- Line1 Account:
- Line1 Password:
- SIP port:
- RTP Port:
- Expire:

An 'OK' button is located at the bottom center of the configuration area.

Figure 18. SIP Information

The following table describes this screen.

Table 4. SIP Information

LABEL	DESCRIPTION
RUN Mode	Select Proxy mode or Peer-to-Peer mode
Proxy IP Address	Set Proxy IP Address in dotted decimal notation e.g.192.168.4.71.
Proxy Port	SIP local UDP port number (5060~5070), default: 5060.
Domain	Set Domain Name of Proxy Server.
Prefix String	Set prefix for gateway to work with proxy server.
Line1 Number	Set Line1 Number.
Line1 Account	Set Line1 Account Name.
Line1 Password	Set Line1 Account Password.
SIP Port	Set SIP port number, example 5060.
RTP Port	Set RTP port number, example 16384.
Expire	Used to inform proxy server the valid duration of the registration information.
OK	Click OK to save your changes back to volatile memory.

8. System Configuration Screen

Click System conf in the navigation panel and open the System Configuration Screen.

System Configuration	
Keypad DTMF Type:	<input checked="" type="radio"/> In-Band <input type="radio"/> RFC2833
RFC2833 Payload Type:	<input type="text" value="96"/>
FAX Payload Type:	<input type="text" value="101"/>
Inter Digit Time:	<input type="text" value="3"/>
Busy Forward:	<input checked="" type="radio"/> ON <input type="radio"/> OFF
End of Dial Digit:	<input type="radio"/> NONE <input type="radio"/> * <input type="radio"/> #
<input type="button" value="OK"/>	

Figure 19. System Configuration

The following table describes this screen.

Table 5. System Configuration

LABEL	DESCRIPTION
Keypad Type	Select In-Band, RFC2833 on DTMF relay type
RFC2833 Payload Type	RFC2833 Payload Type (range:96~128 inter-used:100,102~105)
FAX Payload Type	Set Fax Payload Type (range: 96 or 101, default: 101)
Inter Digit Time	Set the DTMF inter digit time (second)
Busy Forward	Enable it to route the call to the next line (While the line number is not matched or engaged)
End of Dial Digit	Set end of dial key as NONE, * , or #.
OK	Click OK to save your changes back to volatile memory.

9. Voice Setting Screen

This Chapter covers voice is associated with the audio setting information.

Click Voice Setting in the navigation panel and open the Voice Setting Screen.

Voice Setting			
Codec Priority	1st G.729a	2nd G.723.1	3rd G.711mu-Law
	4th G.711A-Law		
Frame Size	G.723.1 50ms	G.729a 40ms	G.711mu 40ms
	G.711A 40ms		
G.723 Silence Suppression:	<input type="radio"/> enable <input type="radio"/> disable		
Volume:	voice 25	input 25	DTMF 23
Echo Cancelor:	<input type="radio"/> enable <input type="radio"/> disable		
Jitter Buffer:	Min. Delay 90	Max. Delay 150	
Optimized Factor (Jitter):	9		
OK			

Figure 20. Voice Configuration

The following table describes this screen.

Table 6. Voice Configuration

LABEL	DESCRIPTION
Codec Priority	Set priority preference of installed codes, G.723, G.711A, G.711U, G.729.
Frame Size	Set Specify sending packet size, G.723, G.711A, G.711U, G.729.
G723 Silence Suppression	Select enable/disable for G723 Silence Suppression function.
Volume	Set voice, input, DTMF functions specify the following levels.
Echo Canceller	Setting enable/disable of echo canceller.
Jitter Buffer Min. Delay	Setting of jitter buffer min delay.
Jitter Buffer Max. Delay	Setting of jitter buffer max delay.

LABEL	DESCRIPTION
Optimized Factor (Jitter):	Setting Optimized Factor (Jitter).
OK	Click OK to save your changes back to volatile memory.

Note: Well understand the application before you change voice parameters, because this might cause incompatibility.

10. Phone Pattern Screen

The progress tone of SP5001/S is configurable. Default tone value is set according to U.S. tone specification. Users may adjust the values according to their own country's tone specification or users-defined tone specification.

Click Phone Pattern in the navigation panel and open the Phone Pattern Screen.

Phone Pattern						
Ring Tone:	Frequency	20	On	2000	Off	4000
Ring Back Tone:	High(freq)	480	Low(freq)	440	High(lev)	155
				Low(lev)	155	On
						Off
						2000
						4000
Busy Tone:	High(freq)	620	Low(freq)	480	High(lev)	155
				Low(lev)	155	On
						Off
						500
						500
Dial Tone:	High(freq)	440	Low(freq)	350	High(lev)	155
				Low(lev)	155	On
						Off
						8000
						0
2nd Dial Tone:	High(freq)	440	Low(freq)	350	High(lev)	19
				Low(lev)	19	On
						Off
						25
						25
OK						

Figure 21. Phone Pattern

The following table describes this screen.

Table 7. Phone Pattern Configuration

LABEL	DESCRIPTION
Ring Tone	Setting the played tone type, when SP5001/S is receiving a call.
Ring Back Tone	Setting the played tone type, when SP5001/S receives a Q.931 Alerting message. In condition that SP5001/S is the originating side.
Busy Tone	Setting the played tone type, when destination is busy.
Dial Tone	Setting the played tone type, when hook off a phone set of workable SP5001/S.
2nd Dial Tone	Set the detective flash range in ms, for example, 300-500 ms.
OK	Click OK to save your changes back to volatile memory.

11. Support Function Screen

Click Support Function in the navigation panel and open the Support Function Screen.

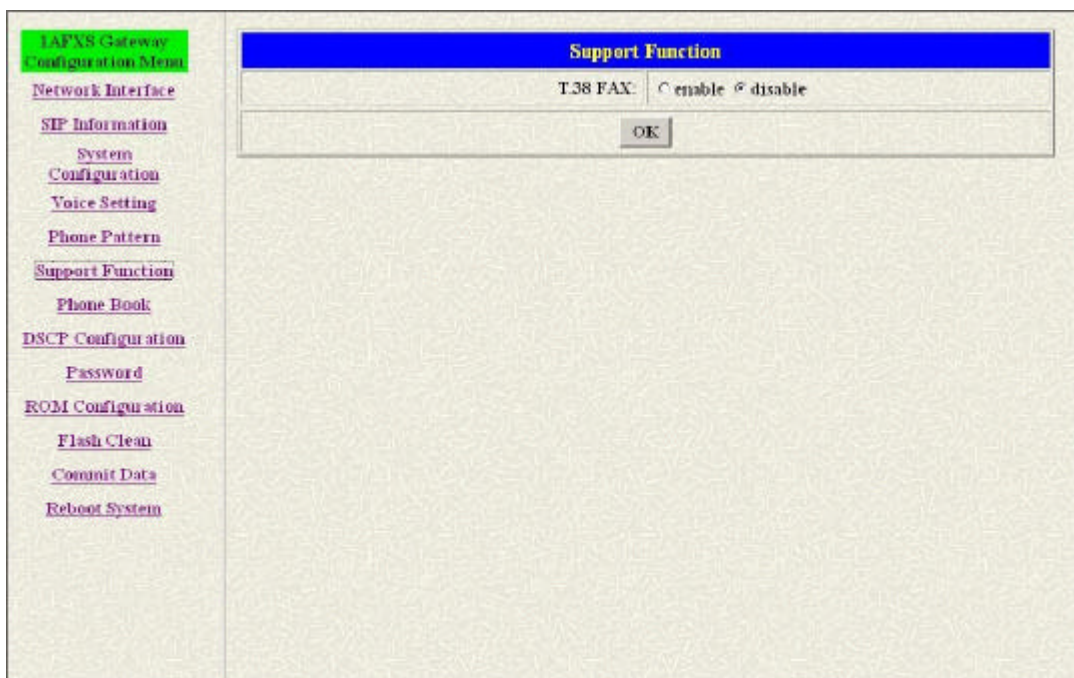


Figure 22. Support Function

The following table describes this screen.

Table 8 Support Configuration

LABEL	DESCRIPTION
T.38 FAX	Select enable/disable for T.38 FAX Function.
OK	Click OK to save your changes back to volatile memory.

12. Phone Book Screen

This Chapter covers Phone Book function allows users to define their own numbers, which mapping to real IP address. It is effective only in peer-to-peer mode. When adding a record to Phone Book, users do not have to reboot the machine, and the record will be effective immediately.

Click Phone Book in the navigation panel and open the phone Book Screen.

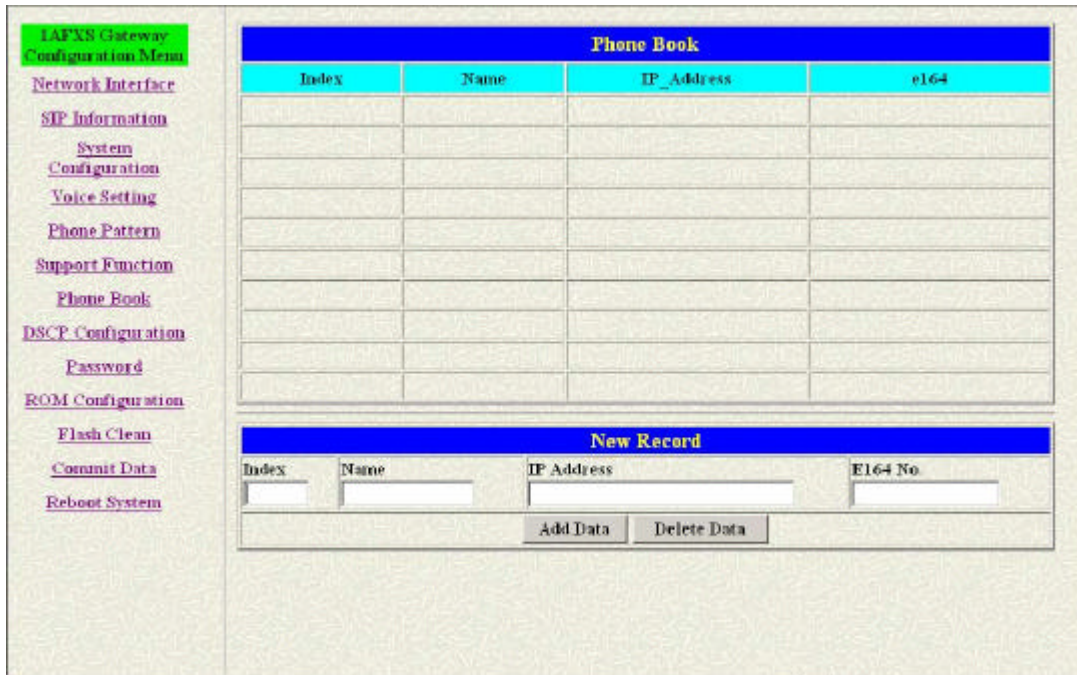


Figure 23. Phone Book

The following table describes this screen.

Table 9. Phone Book

LABEL	DESCRIPTION
Record List	
Index	The field displays the index number.
Name	The field displays the descriptive name.
IP Address	The field displays the IP Address or Domain name.
e164	The field displays the descriptive e164 number.
New Record	
Index	Set up an Index number.

LABEL	DESCRIPTION
Name	Set up a descriptive name.
IP Address	Set up IP Address or Domain Name.
e164 No.	Set up e164 (telephone) number
Add Data	Add a record to Phone Book.
Delete Data	Delete a record to Phone Book.

Note: The e164 number defined in phone book will fully carry to destination. It is not just a representative number for destination' s IP Address. In other words, user dial this e164 number to reach destination, destination will receive the number and find out if it is matched to its e164, including Line number in some particular device.

13. DSCP Configuration Screen

This Chapter covers IP Packet ToS (type of Service)/Differentiated Service configuration.

Click DSCP Configuration in the navigation panel and open the DSCP Configuration Screen.

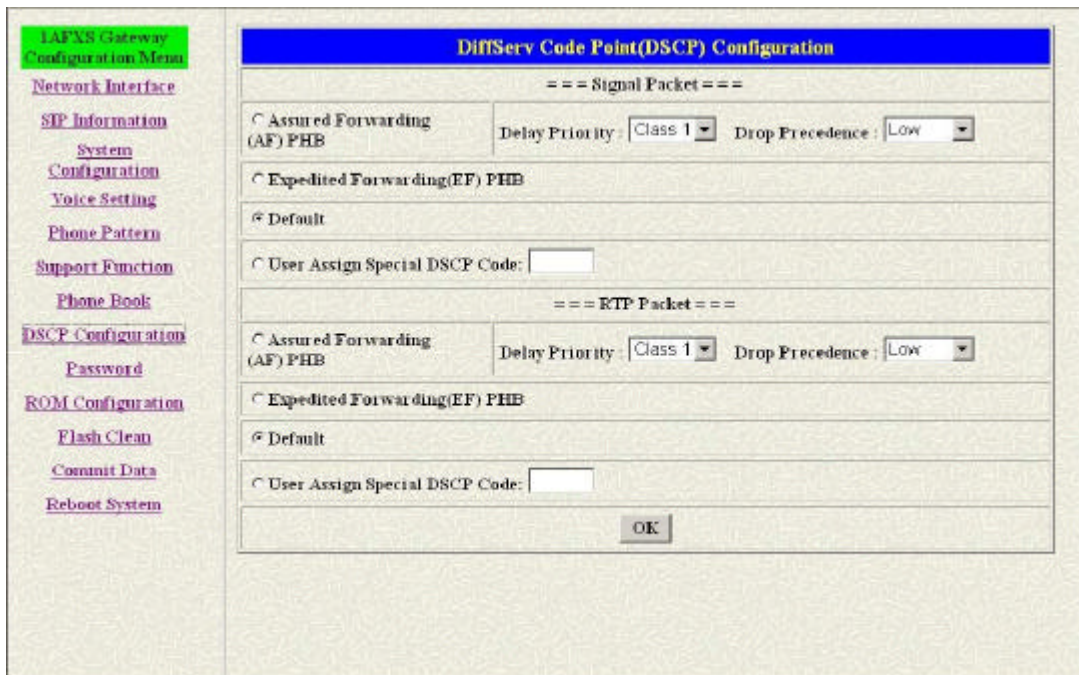


Figure 24. DSCP Configuration

The following table describes this screen.

Table 10. DSCP Configuration

LABEL	DESCRIPTION
Assured Forwarding (AF) PHB	Select Delay priority and Drop Precedence.
Expedited Forwarding (EF) PHB	Select TOS value as EF.
Default	Select TOS value as 0.
User Assign Special DSCP Code	User can set other unspecified value here.
OK	Click OK to save your changes back to volatile memory.

14. Password Screen

Click Password in the navigation panel to open the Password Configuration screen.

Use the Password Configuration to set root and administrator password for SP5001/S.

It is highly recommended that you change the default password (“Null”).

The screenshot shows the 'Password' configuration screen. On the left is a navigation menu with options like 'Network Interface', 'SIP Information', 'System Configuration', 'Voice Setting', 'Phone Pattern', 'Support Function', 'Phone Book', 'DSCP Configuration', 'Password', 'ROM Configuration', 'Flash Clean', 'Commit Data', and 'Reboot System'. The main area has a blue header 'Password' and a form with a dropdown menu showing 'root', three input fields for 'Current Password', 'New Password', and 'Confirm New Password', and two buttons: 'CHANGE' and 'ABORT'.

Figure 25. Password Configuration

The following table describes this screen.

Table 11. Password

LABEL	DESCRIPTION
Username	Select root or administrator different options from the drop-down list box.
Current Password	Type the existing system password (“Null” is the default password when shipped).
New Password	Type your new system password.
Confirm New Password	Confirm your new system password for confirmation.
CHANGE	Click CHANGE to save your change back to volatile memory.
ABORT	Click ABORT to begin configuring this page afresh.

15. ROM Upgrade Screen

Click ROM Upgrade in the navigation panel and open the ROM Configuration Screen.

Figure 26. ROM Configuration

The following table describes this screen.

Table 12. ROM Configuration

LABEL	DESCRIPTION
FTP/TPFT Server IP Address	Enter the FTP or TFTP Server IP Address.
Target File Name	Enter the file name prepared to upgrade.
Method	Select download method as FTP or TFTP.
FTP Login Name	Enter the FTP Login name (max 14 byte)
FTP Login Password	Enter the FTP Login password (max 14 byte)
Target File Type	Select download Target File Type on 2M Boot Image, DSP Application Image, DSP Core Image, DSP Test Image different options from the drop-down list box.
OK	Click OK to save your change back to volatile memory.

16. Flash Clean Screen

Click Flash Clean in the navigation panel and open the Flash Clean Screen.

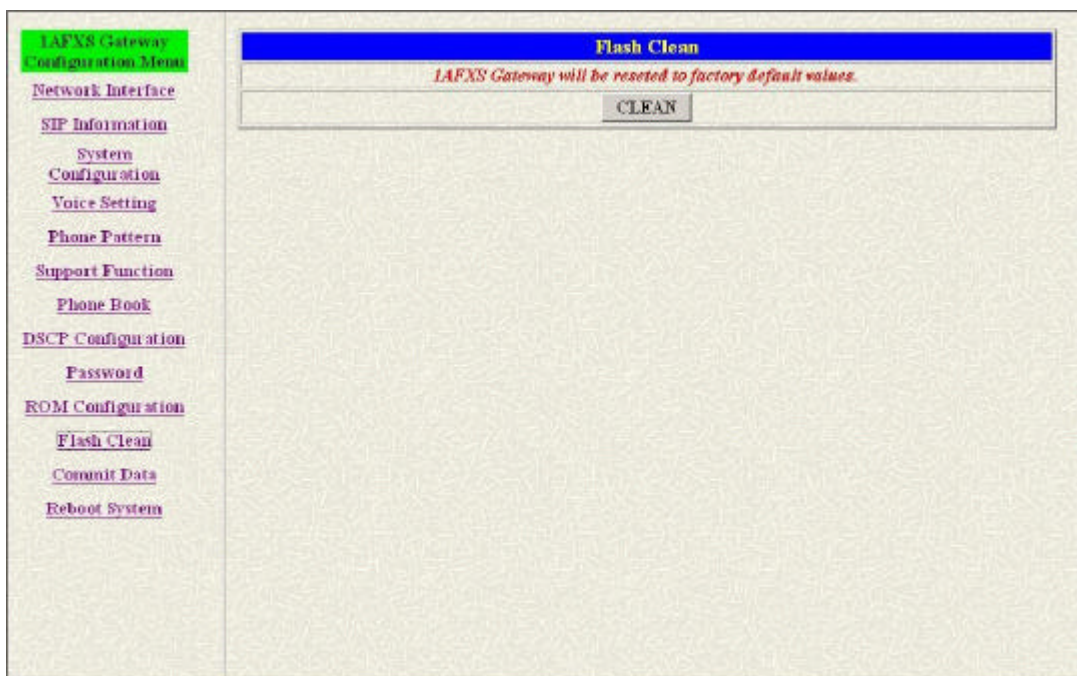


Figure 27. Flash Clean

The following table describes this screen.

Table 13. Flash Clean

LABEL	DESCRIPTION
Clean	Clean all of the user-defined values to factory default.

Note: It is only executed by user whose login name is root. All configurations in command [ifaddr] will be kept.

17. Commit Data Screen

Click Commit Data in the navigation panel and open the Commit Data Screen.

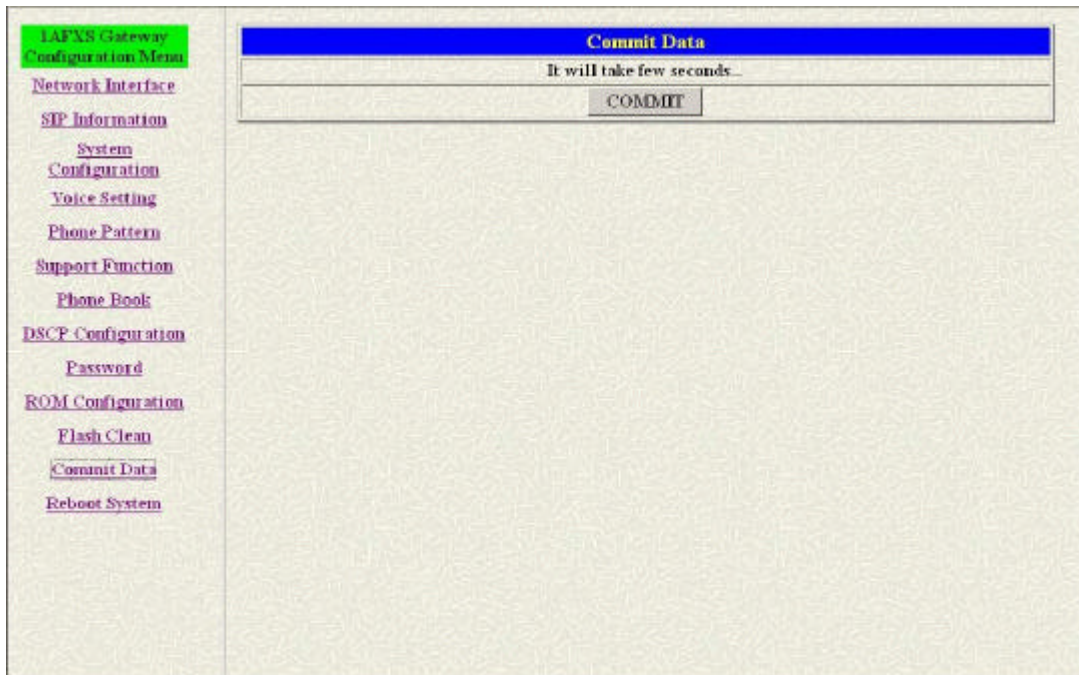


Figure 28. Commit Data

The following table describes this screen.

Table 14. Commit Data

LABEL	DESCRIPTION
Commit	Save changes after configuring SP5001/S.

18. Reboot System Screen

Click Reboot System in the navigation panel and open the Reboot FXS System screen.

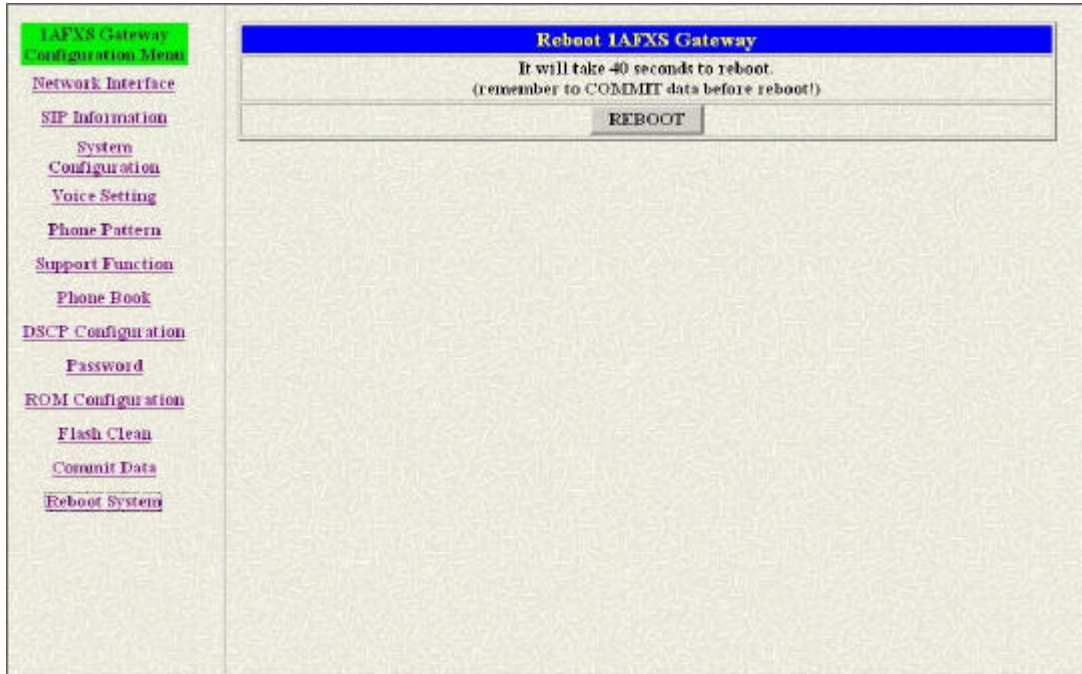


Figure 29. Reboot FXS System

The following table describes this screen.

Table 15. Reboot FXS System

LABEL	DESCRIPTION
Reboot	After commit command, type reboot to reload SP5001/S in new configuration. The procedure is as below:

19. Command List

This chapter introduces the command line interface and lists all of the commands.

19.1 Hyper Terminal Setting

A terminal emulator is needed when using RS-232 port to configure SP5001/S. Here, we use Microsoft HyperTerminal to depict how to set up terminal emulator:

- Step 1.** Execute the Hyper Terminal program, and then the following windows will pop-up on the screen. (START→Program files→ Accessories→ Communication→Hyper Terminal)

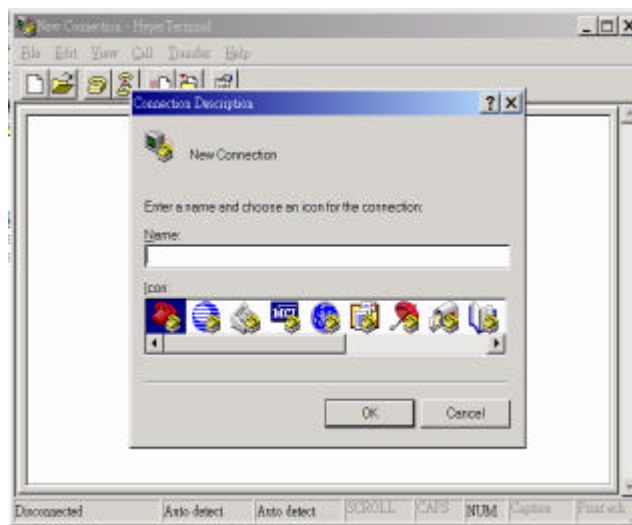


Figure 30. Hyper Terminal Setting

- Step 2.** Define a name such as SP5001 for this new connection.



Figure 31. Connection Description

Step 3. After pressing OK button, the next window will appear, and then choose COM1/2 Port, which you are going to use.



Figure 32. “Connect To” Page

Step 4. Configure the COM Port Properties as following: Bits per second: 9600, Flow control: None, Press OK button, and then start to configure SP5001/S.

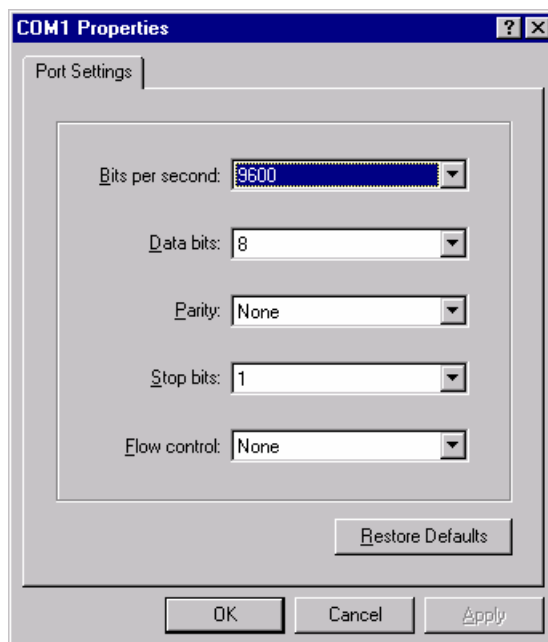


Figure 33. Com Properties

19.2 Power Up Your SP5001/S

At this point, you should have connected the console port, the LAN Port, the WAN port and the power port to the appropriate devices or lines. Plug the power adapter into a wall outlet. The Power LED should be on. The Status LED will come on after the system tests are complete. The WAN LED and one of the LAN LEDs come on immediately after the Status LED come on, if connections have been made to the LAN and WAN ports.

Initial Screen

When you power on, your SP5001/S will perform server internal tests as well as line initialization.

After the tests, SP5001/S asks you to enter the Login, as shown.

```
Attached TCP/IP interface to cpm unit 0
Attaching interface lo0...done

Please wait while system is initializing .....SAttached TCP/IP interface
to cpm unit 0
Attaching interface lo0...done
WorkMode : PEER2PEER_MODE

AC4804[0] is ok
successful 1 2
Initialize OSS libraries...OK!
VP v1.40 stack open successfully.

login:
```

Figure 34. Initial Screen

Entering Login

For you first login, enter the login root and default password "Null". As you type the password, the screen displays and (*) for each character you type.

```
AC4804[0] is ok
successful
Initialize OSS libraries...OK!
VP v1.40 stack open successfully.

login:root
Welcome to Terminal Configuration Mode
Please enter your configuration item

usr/config$
```

Figure 35. Login Screen

Note: root or administrator is the default login name and there is no password needed.

Set Password

To set your own password in root login name, just input command “passwd–set root ****”. For example, if password of root account is prepared as ”voip”, configuration is

```
usr/config$ passwd -set root voip

Setting
Login: root
Password: voip
OK
usr/config$
```

Figure 36. Change password Screen

19.3 Command Structure in SP5001/S

You can use text command lines for software configuration. The rules of the commands are listed next. The command keywords are in courier new font.

1. The command keywords must be entered exactly as shown, that is, no abbreviations are allowed.
2. “Command” refers to a command used in the command line interface.

19.3.1 Command Structure in SP5001/S

SP5001/S uses a two-level command structure. The commands related to one subsystem are group under a primary command of that subsystem, for instance, to configure the parameters, you must fist enter the `usr/config$` subsystem by entering the `ifaddr` command. When you are in a subsystem, the system reminds you by including the subsystem name in the command prompt, for example,

```
usr/config$
```

19.3.2 Set up IP Address

Use command “ifaddr” to configure Gateway’ s IP Address and related information. For example

```
usr/config$ ifaddr -ip 10.1.1.1 -mask 255.255.255.0 -gate 10.1.1.254
```

Description: This is to configure IP Address as “10.1.1.1”; subnet mask as “255.255.255.0”; default router gateway as “10.1.1.254”.

Note: After configured the IP Address and did the [commit], then [reboot] process, user can start to do other configurations via HTTPD.

19.3.3 Application Mode Configuration

It is including Basic mode, such as Proxy Server and Peer-to-Peer, and Advanced mode, IP-Sharing mode. It will be detailed in the next Chapter.

19.3.4 Saving Your Configuration

Save the change of configurations for SP5001/S and apply the new configurations by rebooting the device.

Step 1. Confirm the changed configurations; input “commit” and press “enter” to save it.

Step 2. Input “reboot” then press, “enter” to restart SP5001/S.

Step 3. After around 40 seconds, SP5001/S will take effect in new configurations.

These commands save all system configuration into nonvolatile memory. Nonvolatile memory refers to the storage of SP5001/S that remains even if its power is turned of. Run Time (memory) is lost when its power is turned off. You must use the command to save any configuration that you make, otherwise it will return to its default setting when it is restarted.

**Do not turn off or remove SP5001/S
while saving your configuration.**

19.4 Application modes

This section will introduce the four application modes users often use.

Particularly the Proxy and Peer-to-Peer mode are the basic application mode. User would like to set as advanced application mode, such as PPPoE Mode and Behind IP-Sharing mode, please refer to the basic application mode for more information.

19.4.1 Proxy mode

Proxy mode means that there will be an intermediate Proxy Server between SP5001/S and the remote entity. While operating at this mode, SP5001/S will first register to the Proxy Server located at the ISP side. For the following operation, it sends the INVITE message to the Proxy Server once you initiate a session. Then the Proxy server will forward the INVITE message to the right place. And the Response message from the remote entity will be forwarded back to you via Proxy server.

Step 1. If you have one or more accounts included user name and password, you need to configure the accounts using “security”

command. For detail, please refer to Chapter 19.7.13 [security] command.

An example is demonstrated below:

```
usr/config$ security -line 1 -name 12345 -password 12345
```

Note: This is to set username (userid) as “12345”, password as “12345” into line1, which means line1 can accept incoming calls after successfully registered to Proxy server.

Step 2. You must specify Proxy address obtained from your service provider. And the Proxy address can be IPv4 address as well as DNS name. For detail, please refer to Chapter 19.7.12 [sip] command.

Several important SIP parameters are listed below when setting proxy mode: “-px” and “-line1”.

An example is demonstrated below:

```
usr/config$ sip -px 210.68.222.33 -line1 0506
```

Note:

1. This is to set proxy address as “210.68.222.23”, line1 number as “0506”.
2. The line number of line1 depends on what you get from your service provider.

Step 3. Confirming the values, type commit and press enter to save all the changes you have done.

Step 4. Type reboot and press enter to reboot SP5001/S.

Step 5. Wait for SP5001/S to initialize in Proxy mode. It should take around 40 seconds. And you will see the below information displayed on Hyper-Terminal if the registration is successful.

```
Attached TCP/IP interface to cpm unit 0
Attaching interface lo0...done

Please wait while system is initializing ..... SAttached TCP/IP
interface to cpm unit 0
Attaching interface lo0...done
WorkMode : PROXY_MODE
Start registering to Proxy server

Registering to: Sip:80.248.33.37 with the following :
    To:sip:sipcenter1123@80.248.33.37
    From:sip:sipcenter1123@80.248.33.37
    Contact:sip:sipcenter1123@210.59.163.143
```

```
Expires:3600

Registering to: Sip:80.248.33.37 with the following :
  To:sip:sipcenter1165@80.248.33.37
  From:sip:sipcenter1165@80.248.33.37
  Contact:sip:sipcenter1165@210.59.163.143
  Expires:3600

Account: sipcenter1123 registration succeeded
Account: sipcenter1165 registration succeeded

AC4804[0] is ok
successful
Initialize OSS libraries...OK!
VP v1.40 stack open successfully.

login:
```

19.4.2 Peer-to-Peer Mode

Peer-to-Peer Mode allows users to call other VoIP devices without the proxy server. When in Peer-To-Peer mode, SP5001/S will send INVITE message directly to the destination IP address once the dial is finished. One can use PhoneBook, which will dial predefined phone number, and press “#” (optional, to accelerate the dial) as end of dial. Or, users can use SpeedDial button, which is mapping to user defined PhoneBook, Button1 to PhoneBookIndex1, and Button2 to PhoneBookIndex2...etc..

To configure Peer-To-Peer Mode in SP5001/S, follow the steps below:

Step 1. Set Peer-To-Peer Mode, using “h323” command

```
usr/config$ sip -mode 0
```

Note: mode 0 is for Peer-To-Peer mode, while mode 1 is for Proxy mode.

Step 2. Configure PhoneBook, using “pbook” command.

Users can refer to chapter 19.7.9 [pbook] command for more information.

```
usr/config$ pbook -add name TEST1 ip 10.1.1.1 e164 10
```


Note: The command is to add a record onto PhoneBook. After the command completed, you can type “pbook –print” to see if the input record is correct.

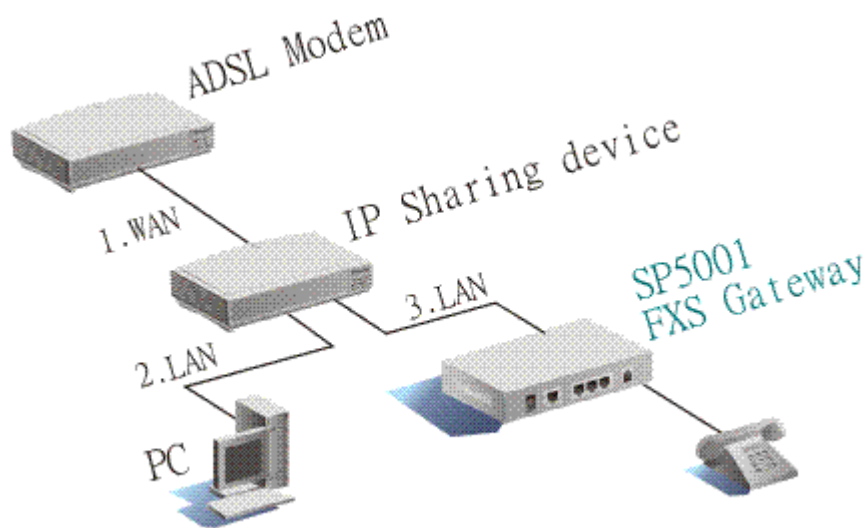
When adding a record to Phone Book, users do not have to reboot the machine, and the record will be effective immediately. For phonebook configuration, please refer to Chapter 19.7.9.

19.4.3 Behind IP-Sharing Mode

One Set of SP5001/S

The function is for user whose network environment is behind IP Sharing device. It is said SP5001/S is connected to the IP Sharing device (Router).

An example such as ADSL network is in the following.



1. The WAN IP Address obtained from ADSL has two kinds of methods. One is fixed IP Address, while user applies for one or more fixed IP Addresses. Another is dynamic IP Address while user applies for dial-up connection way.
2. The LAN IP Address of User' s PC can be set as DHCP client in order to gain an valid one.
3. One can also assign a fixed IP address which belongs to the same network segment as the LAN interface of IP Sharing device.
4. SP5001/S must enable the IP Sharing function for the fixed / dynamic WAN IP Address.

Fixed IP Address:

```
usr/config$ ifaddr -ipsharing 1 210.11.22.33
```

Note: With Dynamic WAN IP Address, when the WAN IP is changed, we need to change the external IP of SP5001/S using above command.

5. IP Sharing device must have a function to do IP/Port mapping. Some is named as DMZ; some is named as virtual server. The VoIP messages from WAN have to completely pass forward to the LAN. It is said if SP5001/S is assigned a virtual fixed IP Address such as 192.168.1.5, IP Sharing device must forward the VoIP messages to 192.168.1.5.

Please see the following for example:

>Advanced setting > NAT setting > DMZ Host setting

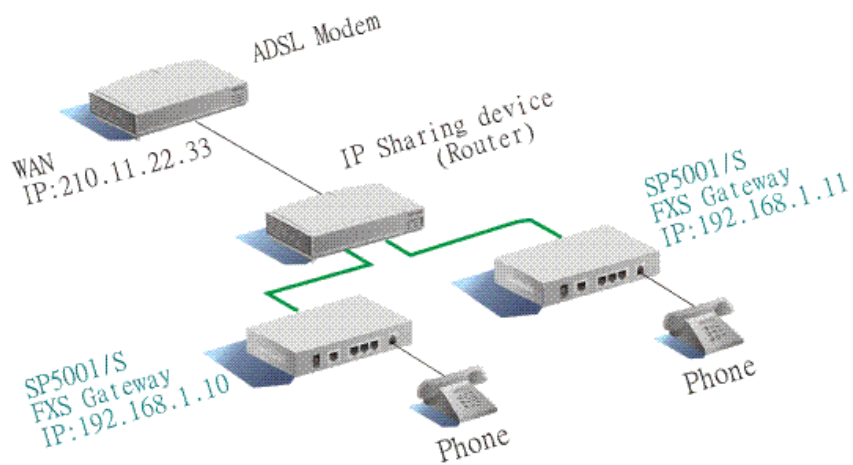
DMZ Host setting

Activate

DMZ

DMZ Host IP : . . .

Two Sets of SP5001/S



1. The WAN IP Address obtained from ADSL has two kinds of methods. One is fixed IP Address, while user applies for one or more fixed IP Addresses. Another is dynamic IP Address while user applies for dial-up connection way.
2. The LAN IP Address of User's PC can be set as DHCP client in order to gain a valid one.
3. Assign an IP address to each set using DHCP or fixed address.
4. Enable the IP Sharing function for each set using following command.

```
Fixed IP Address  
usr/config$ ifaddr -ipsharing 1 210.11.22.33
```

5. Configure separate SIP port and RTP port for each set to prevent from port conflict. For example, if set A uses the default settings (SIP port: 5060, RTP port: 16384), you must change set B's setting to SIP port equal to 5061 and RTP port equal to 26384 for instance.

```
Change SIP port - usr/config$ sip -port 5061  
Change RTP port - usr/config$ sip -rtp 26384
```

6. Use the Port Forwarding or Port Redirection function provided by IP Sharing device (Router). See the following for example.

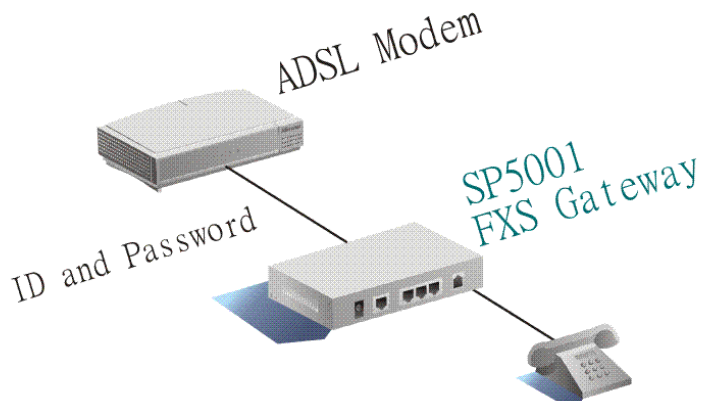
Active Configuration

Items	Service name	Protocol	Actual Port	Virtual IP	Virtual Port	Enable
1	1	UDP	5060	192.168.1.10	5060	v
2	2	UDP	16384	192.168.1.10	16384	v
3	3	UDP	16394	192.168.1.10	16394	v
4	4	UDP	5061	192.168.1.11	5061	v
5	5	UDP	26384	192.168.1.11	26384	v
6	6	UDP	26394	192.168.1.11	26394	v
7		---	0		0	x
8		---	0		0	x
9		---	0		0	x
10		---	0		0	x

Note:

1. Different Vendor' s Router will have different appearance of setting.
2. Once you set the DMZ Host, you don' t need to configure the Port Forwarding and vice versa.
3. If there is only one SP5001/S attached to the IP Sharing device, it is recommended to use DMZ Host setting to enable the NAT traverse and disable the Port Forwarding.
4. If there are two or more sets of SP5001/S attached to the IP-Sharing device, please configure the Port Redirection (Forwarding) to enable the NAT traverse and disable the DMZ Host.
5. After the IP Sharing configuration of SP5001/S and IP Sharing device is complete, you must reboot SP5001/S to activate the new settings.

19.4.4 PPPoE Mode



Press [?] or [help] to list all commands, including PPPoE one.

Step 1. `pppoe -dev 1` : switch the IP configurations to PPPoE

Step 2. `pppoe -open` : open the connection

Step 3. `pppoe -id` : input the user ID provided by your ISP

Step 4. `pppoe -pwd` : input the password provided by your ISP

Step 5. `pppoe -reboot` : Reboot the device once after disconnection

After the configurations are done, [commit] and [reboot] the device.

The PPPoE configuration procedures are shown below, setting the ADSL (PPPoE) account obtained from ISP.

Sample account:

User name: 84460791@voip.net

Password: abcd1234

Command:

```
usr/config$ pppoe -id 84460791@voip.net
usr/config$ pppoe -pwd abcd1234
```

Enable the PPPoE function of SP5001/S

Command:

```
usr/config$ pppoe -dev 1
```

Save the configuration and initiate the PPPoE connection.

Command:

```
usr/config$ commit
usr/config$ reboot
```

19.5 How to upgrade

Before you start downloading

1. Please confirm Host PC, which is installed as TFTP / FTP server and device is in available network.
2. Remember the current configuration, such as [pbook], [SIP].

Upgrade steps:

Step 1. [rom -print]

It will list current version and default download method. Please check the Application Rom in particular, it is showed version list, as well as the most common one you have to upgrade.

General speaking, App Rom is named including product name and version and size is under 1MB, such as 4asipfxs.104b. 2MB Rom is named such as 2m4asipfxs.104b. Please be very careful of the prepared Rom file while upgrading.

Step 2. Prepare FTP or TFTP server ready.

A. FTP server:

[rom -method 1] to choose FTP method, and input the FTP login and password by [rom -ftp id password]

B. TFTP server:

It is default value, [rom -method 0] to choose TFTP method.

Step 3. Different Rom uses different command.

A. Application Rom:

```
usr/config$ rom -app -s 192.168.1.1 -4asipfxs.104b
```

B. 2MB Rom:

```
usr/config$ rom -boot2m -s 192.168.1.1 -f 2m4asipfxs.104b
```

Description: -app / -boot2m means the prepared upgrade Rom; -s means where the TFTP / FTP server IP Address is; -f is the Rom file name.

Step 4. Download complete

A. Application Rom:

Use command [flash -clean] to clear old configurations. It will keep all configurations in [ifaddr] and [pppoe].

B. 2MB Rom:

All configurations will be back to default value, including IP Address. In other word, user has to set IP Address and MAC Address before [reboot] the device; otherwise, user cannot access to device any more via Telnet.

Steps 4.1 Find out MAC Address:

There are 12 digits on label on the back panel of the device, or command as

```
usr/config$ ifaddr -ifshow (find the list information of Ethernet address, it is MAC Address.
```

```
usr/config$ setmac (set as 2 digits as a group)
```

00

01

a8

00

xx

xx

If confirmed, press y.

Steps 4.2: Set IP Address

```
usr/config$ ifaddr -ip xxx.xxx.xxx.xxx -mask
```

```
xxx.xxx.xxx.xxx -gate xxx.xxx.xxx.xxx (Please refer to Chapter 19.7.6)
```

Steps 4.3: Hardware version confirmation

Upgrade 2MB Rom may change the hardware column. If it is not as the same as the one, which is found on the label of back panel, please command as

```
usr/config$ rom -hwver x.x
```

Steps 4.4: [commit], [reboot]

19.6 Commands in SP5001/S

The following table lists all of the commands that you can use in SP5001/S. Refer to the following chapters for descriptions of commonly used commands.

This user' s guide describes commands that are helpful for configuring SP5001/S. Using commands not documented in the user' s guide can damage the unit and possibly render it unusable.

Table 16. Commands in SP5001/S

Command	DESCRIPTION
help	help/man/?[command]
quit	quit/exit/close.
debug	show debug message.
reboot	reboot local machine.
flash	clean configuration from flash rom.
commit	commit flash rom data.
ifaddr	internet address manipulation.
time	show current time.
ping	test that a remote host is reachable.
pbook	Phonebook information and configuration.
pppoe	PPPoE stack manipulation.
sysconf	System information manipulation.
sip	This command is to configure SIP related parameters.
security	This command is used to configure the account information included username and password obtained from the service provider.
voice	Voice information manipulation.
support	Special Voice function support manipulation.
tos	TOS service allows users to achieve QoS on IP network.
phone	Setup of call progress tones and ringing (SLIC control).
rom	ROM file update.
passwd	Password setting information and configuration.

19.7 System Commands Overview

19.7.1 [quit]

Type quit will quit configuration mode. And turn back to login prompt.

```
usr/config$ quit

Disconnecting...
login: root
Welcome to Terminal Configuration Mode
Please enter your configuration item
```

Figure 37. quit command list

Note: It is recommended that type the “quit” command before you leave the console. If so, SP5001/S will ask password again when next user connects to console port.

19.7.2 [debug]

Open debug message will show up specific information while Gateway is in operation. After executing the debug command, it should execute command debug -open as well. One example is demonstrated below.

```
usr/config$ debug

Debug message information and configuration
Usage:
debug [-add type1 [[type2]...]] | -open | -close | -status

    -status    Display the enabled debug flags.
    -add       Add debug flag.
    -delete    Remove specified debug flag.
    -open      Start to show debug messages.
    -close     Stop showing debug messages.

Example:
    debug -add sip msg
    debug -open

usr/config$
```

Figure 38. debug command list

In this example, user open debug flags including sip, msg.

```
usr/config$ debug -add sip msg
usr/config$ debug -open
```

Parameter Usages:

- status Display the enabled debug flags.
- add Add debug flag.
- sip sip related information
- msg voice related information
- delete Remove specified debug flag.
- open Start to show debug messages.
- close Stop showing debug messages.

```
usr/config$ debug -status  
  
Current debug type enabled :  
Debug Mode is close  
DEBUG->  
usr/config$
```

Figure 39. debug –print command list

19.7.3 [reboot]

After commit command, type reboot to reload SP5001/S in new configuration.

The procedure is as below:

```
usr/config$ reboot  
  
. Rebooting...It will take 40 seconds....Attached TCP/IP interface to  
cpm unit 0  
Attaching interface lo0...done  
  
HTTPD initialized...  
Flash Check  
WorkMode : PROXY_MODE  
Start registering to Proxy server  
  
AC4804[0] is ok  
successful 1 2  
Initialize OSS libraries...OK!  
VP v1.42 stack open successfully.  
  
login:
```

Figure 40. reboot command list

19.7.4 [flash]

Save changes after configuring SP5001/S.

```
usr/config$ flash

Flash memory information and configuration
Usage:
flash -clean

Note:
    This command will clean the configuration stored in
    the flash and reboot it.

usr/config$
```

Figure 41. flash command list

Parameter Usages:

-clean clean all the user defined value, and reboot SP5001/S in factory default mode.

Note: It is recommended that use “flash –clean” after application firmware id upgraded.

Warning: It is only executed by user whose login name is root. All configurations in command [ifaddr], [pppoe] will be kept

```
usr/config$ flash -clean

Flash clean start
Flash clean success!!

!! rebooting ...
Attached TCP/IP interface to cpm unit 0
Attaching interface lo0...done

HTTPD initialized...
Flash Check
WorkMode : PROXY_MODE
Start registering to Proxy server

AC4804[0] is ok
successful 1 2
Initialize OSS libraries...OK!
VP v1.42 stack open successfully.

login:
```

Figure 42. flash –clean command list

19.7.5 [commit]

Save changes after configuring SP5001/S.

```
usr/config$ commit

This may take a few seconds, please wait....

Commit to flash memory ok!
usr/config$
```

Figure 43. commit command list

Note: Users shall use commit to save modified value, or they will not be activated after system reboot.

19.7.6 [ifaddr]

Configure and display network information.

```
usr/config$ ifaddr

LAN information and configuration
Usage:
ifaddr [-print][[-dhcp used]][-sntp mode [server]]
ifaddr [-ip ipaddress] [-mask subnetmask] [-gate defaultgateway]
ifaddr [-dns index [dns server address]]

    -print      Display LAN information and configuration.
    -ip         Specify ip address.
    -mask       Set Internet subnet mask.
    -gate       Specify default gateway ip address
    -dhcp       Set DHCP client service flag (On/Off).
    -sntp       Set SNTP server mode and specify IP address.
    -dns        specify IP address of DNS Server.
    -timezone   Set local timezone.
    -ipsharing  Specify usage of an IP sharing device and specify IP
address.
    -upnp       Specify the upnp mode of ipsharing(0:Off/1:On)

Note:
    Range of ip address setting (0.0.0.0 ~ 255.255.255.255).
    DHCP client setting value (On=1, Off=0). If DHCP set to 'On',
    Obtain a set of Internet configuration from DHCP server assigned.
    SNTP mode (0=no update, 1=specify server IP, 2=broadcast mode).

Example:
ifaddr -ip 210.59.163.202 -mask 255.255.255.0 -gate 210.59.163.254
ifaddr -dhcp 1
ifaddr -sntp 1 210.59.163.254
ifaddr -ipsharing 1 210.59.163.254
ifaddr -upnp 1
ifaddr -dns 1 168.95.1.1

usr/config$
```

Figure 44. ifaddr command list

Parameter Usages:

- print print current IP setting and status
- ip assigned IP address for SP5001/S
- mask internet subnet mask
- gate IP default gateway
- dhcp Dynamic Host Configuration (1 = ON; 0 = OFF)
- sntp Simple Network Time Protocol (1 = ON; 0 = OFF) When SNTP function is activated, users have to specify a SNTP server as network time source. An example is demonstrated below:
- dns Specify Primary (-dns 1) or Secondary (-dns 2) DNS Server IP address.

```
usr/config$ ifaddr -dns 1 168.95.1.1
usr/config$ ifaddr -dns 2 203.23.123.2
```

- timezone set local time zone according to GMT

```
usr/config$ ifaddr -sntp 1 10.1.1.1
While 10.1.1.1 stands for SNTP server's IP address.
```

- ipsharing To specify a global fixed IP address, user can add this IP address in the command.

```
usr/config$ ifaddr -ipsharing 1 210.11.22.33
```

- upnp Enable/ Disable UPnP function. If IP sharing has this function, use can enable upnp function that user doesn't need to configure gateway or IP sharing for NAT function.

```
usr/config$ ifaddr -print

Internet address information
  IP address       : 192.168.4.72
  Subnet mask     : 255.255.0.0
  Default gateway : 192.168.1.254
  DHCP startup    : OFF
  SNTP            : mode=1
                  server 168.95.195.12
                  time zone : GMT+8
                  cycle=1024 mins

  IPSharing       : no IPSharing device.

  Primary DNS Server : 168.95.1.1
  Secondary DNS Server : 168.95.1.1
usr/config$
```

Figure 45. ifaddr -print command list

19.7.7 [time]

When SNTP function of SP5001/S is enabled and SNTP server can be found as well, type time command to show current network time.

```
usr/config$ time
Current time is WED SEP 17 12:36:49 2003
usr/config$
```

Figure 46. time command list

19.7.8 [ping]

Use ping to test whether a specific IP is reachable or not.

For example: if 192.168.1.2 is not existing while 210.63.15.32 exists. Users will have the following results:

```
usr/config$ ping 192.168.1.2
no answer from 192.168.1.2
usr/config$ ping192.168.1.254
PING 192.168.1.254: 56 data bytes
64 bytes from 192.168.1.254: icmp_seq=0. time=5. ms
64 bytes from 192.168.1.254: icmp_seq=1. time=0. ms
64 bytes from 192.168.1.254: icmp_seq=2. time=0. ms
64 bytes from 192.168.1.254: icmp_seq=3. time=0. ms
----192.168.1.254 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round-trIP (ms)  min/avg/max = 0/1/5
210.63.15.32 is alive
usr/config$
```

Figure 47. ping command list

19.7.9 [pbook]

Phone Book function allows users to define their own numbers, which mapping to real IP address. It is effective only in peer-to-peer mode. When adding a record to Phone Book, users do not have to reboot the machine, and the record will be effective immediately.

```
usr/config$ pbook

Phonebook information and configuration
Usage:
pbook [-print [start_record] [end_record]]
pbook [-add [ip ipaddress] [name Alias] [e164 phonenumber]]
pbook [-search [ip ipaddress] [name Alias] [e164 phonenumber]]
pbook [-insert [index] [ip ipaddress] [name Alias] [e164 phonenumber]]
pbook [-delete index]
pbook [-modify [index] [ip ipaddress] [name Alias] [e164 phonenumber]]

    -print      Display phonebook data.
    -add        Add an record to phonebook.
    -search     Search an record in phonebook.
    -delete     Delete an record from phonebook.
    -insert     Insert an record to phonebook in specified position.
    -modify     Modify an exist record.

Note:
    If parameter 'end_record' is omitted, only record 'start_record'
will be display.
    If both parameters 'end_record' and 'start_record' are omitted,
all records
will be display.
    Range of ip address setting (0.0.0.0 ~ 255.255.255.255).
    Range of index setting value (1~100),

Example:
pbook -print 1 10
pbook -print 1
pbook -print
pbook -add name Test ip 210.59.163.202 e164 1001
pbook -insert 3 name Test ip 210.59.163.202 e164 1001
pbook -delete 3
pbook -search ip 192.168.4.99
pbook -modify 3 name Test ip 210.59.163.202 e164 1001

usr/config$
```

Figure 48. phone book command list

Parameter Usages:

-print print out current contents of Phone Book. Users can also add index number, from 1 to 100, to the parameter to show specific phone number.

Note: <index number> means the sequence number in phone book. If users do request a specific index number in phone book,

SP5001/S will give each record a automatic sequence number as index.

- add add a new record to phone book. When adding a record, users have to specify name, IP, and e164 number to complete the command.
- search search a record in phone book. The searching criteria can be name, IP, or e164.
- delete delete a specific record. “pbook –delete 3” means delete index 3 record.
- insert add a new record and force to assign a specific index number for it.
- modify modify an existing record. When using this command, users have to specify the record’ s index number, and then make the change.

PhoneBook Rules:

The e164 number defined in phone book will fully carry to destination. It is not just a representative number for destination’ s IP Address. In other words, user dial this e164 number to reach destination, destination will receive the number and find out if it is matched to its e164, including Line number in some particular device.

```
usr/config$ pbook -print
index  Name          IP              E164
=====
1      test1         192.168.4.73   200
-----
usr/config$
```

Figure 49. pbook –print command list

19.7.10 [pppoe]

Display PPPoE related information.

```
usr/config$ pppoe

PPPoE device information and configuration
Usage:
pppoe [-print][[-open][[-close]
pppoe [-dev on/off][[-id username][[-pwd password]

    -print      Display PPPoE device information.
    -dev        Enable(=1) or Disable(=0) device.
    -open       Open PPPoE connection.
    -close      Disconnect PPPoE connection.
    -id         Connection user name.
    -pwd        Connection password.
    -reboot     Reboot after remote host disconnection.

usr/config$
```

Figure 50. pppoe command list

Parameter Usages:

- print print PPPoE status.
- dev Enable PPPoE Dial-up function
- open Open the connection
- close Close the connection
- id Input the User name ID provided by ISP
- pwd Input the User name password provided by ISP
- reboot Reboot the PPPoE connection.

```
usr/config$ pppoe -print

PPPoE adapter information
Device           : Enabled
Status           : Not initialized
User name        : pppoe
Password         : *****
Reboot           : No
```

Figure 51. pppoe -print command list

19.7.11 [sysconf]

This command displays system information and configurations.

```
usr/config$ sysconf

System information and configuration
Usage:
  sysconf [-idtime digit] [-bf digit] [-keypad dtmf]
          [-faxtype type][-2833type type][-lcdrop ON/OFF]
          [-droptime digit][-eod digit]
  sysconf -print

-print          Display system overall information and configuration.
-idtime        Inter-Digits time.(1~10 sec)
-bf            BusyForward.(ON:1 / OFF:0)
-keypad        Select DTMF type: 0=In-band,
                1=RFC2833.
-faxtype        FAX Payload Type      (range:96~128
inter-used:100,102~105)
-2833type        RFC2833 Payload Type (range:96~128
inter-used:100,102~105)
-lcdrop        Disconnect Supervision (Loop Current Drop) (ON:1 / OFF:0)
-droptime        Period of Loop Current Drop (ms)
-eod            End of Dial Digit setting(0: none, 1: *, 2: #)
Example:
  sysconf -keypad 0 -eod 2

usr/config$
```

Figure 52. system information command list

Parameter Usages:

-print print current settings

-idtime set the duration (in second) of two pressed digits in dial mode as timed out. If after the duration user hasn't pressed next number, LAN Phone will dial out all number pressed.

-bf Only working in Proxy mode.

-keypad DTMF relay type. When value is "1", SP5001/S will transfer DTMF signal via RTP payload as defined in RFC2833. When the value is set to "0", the DTMF type is set as In-band.

-faxtype FAX Payload Type. Range: 96~128 inter-used:100,102~105.

-2833type RFC2833 Payload Type. Range: 96~128 inter-used:100,102~105.

-lcdrop Disconnect Supervision (Loop Current Drop) (ON:1 / OFF:0).

-droptime Period of Loop Current Drop (ms).

-eod to define end of dial digit. (0: none, 1: *, 2: #).

```
usr/config$ sysconf -print

System information
  Inter-Digits time      : 3
  BusyForward           : OFF
  Keypad DTMF type      : In-band
  End of Dial Digit     : #
  RFC2833 Payload Type  : 96
  FAX Payload Type      : 101
  Disconnect Supervision : OFF
  Loop Current Drop Time(ms) : 500
usr/config$
```

Figure 53. sysconf -print command list

19.7.12 [sip]

This command is to configure SIP related parameters.

```
usr/config$ sip

SIP stack information and configuration
Usage:
sip [-mode pxmode]
sip [-px address] [-domain domain] [-prefix prefixstring]
    [-line1 number]
    [-expire t1] [-port udpPort] [-rtp rtpPort]
sip -print

    -print      Display SIP stack information and configuration.
    -mode       Configure as Proxy mode or Peer-to-Peer mode.
    -px         Proxy server address. (Proxy IPv4 address or Proxy dns
name)
    -pxport     Proxy server port.      (the port of proxy)
    -domain     Specify domain name in the URL (if domain name is not
used,
                                     specify as
null)
    -prefix     Specify prefix string, use it when UserID contains
alphabets
                                     (if UserID uses numerals, specify as null)
    -line1     TEL1 Phone number.
    -expire     The relative time after which the message expires(0 ~
(2^31-1))
    -port       SIP local UDP port number (5060~5070), Default: 5060
    -rtp        RTP port number (2326~65534), Default: 16384
Example:
    sip -px 210.59.163.171 -line1 70

usr/config$
```

Figure 54. sip command list

Parameter Usages:

- mode Configure as Proxy mode or Peer-to-Peer mode (0: Peer-to-Peer mode, 1: Proxy mode).
- px to specify Proxy address when SP5001/S is in proxy mode. Proxy address can be IPv4 address or DNS name.
- domian specify the domain name such as "sipcenter.com" and it will be presented in the URL (xxxx@sipcenter.com).
- prefix when your username contains alphabets, for example sip1123, specify the prefix string as "sip".
- line1 assign line 1 number.
- expire this parameter is used to inform proxy server the valid duration

of the registration information.

-port SIP local UDP port which uses to listen incoming SIP Messages.

-rtp Specify the RTP received port number.

Note: One will need to configure port and rtp parameters only when you deploy two or more sets behind the IP sharing device.

```
usr/config$ sip -print

Run Mode           : PROXY MODE
Proxy address      : 10.1.1.2
Proxy port         : 5060
Domain             : null
Prefix string      : null
Linel              : 1001
SIP listen port    : 5060
RTP receive port   : 16384
Expire             : 3600
usr/config$
```

Figure 55. sip -print command list

19.7.13 [security]

This command is used to configure the account information included username and password obtained from the service provider

```
usr/config$ security

Security information and configuration
Usage:
 security [-name username] [-pwd password]
 security -print

-print          Display system account information and configuration.
-line          Specify which line number you want to set the account.
-name          Specify user name.
-pwd          Specify password.
Example:
 security -line 1 -name 1001 -pwd 1001

usr/config$
```

Figure 56. security Command List

Parameter Usages:

- print print current setting in security command.
- line Specify which line number you want to set into the account
Note: If you have only one account, you can set into line1 using this parameter. For example, if you set the account into line1, line1 can accept incoming calls.
- name Specify the username of your account information.
- pwd Specify the password of your account information.

```
usr/config$ security -print

Line1 account information
  Username   : 1001
  Password   : nil

usr/config$
```

Figure 57. security -print command list

19.7.14 [voice]

The voice command is associated with the audio setting information.

There are four voice codecs supported by SP5001/S.

```
usr/config$ voice

Voice codec setting information and configuration
Usage:
voice [-send [G723 ms] [G711U ms] [G711A ms] [G729 ms] ]
      [-volume [voice level] [input level] [dtmf level]]
      [-nscng [G711U used1] [G711A used2] [G723 used3]]
      [-echo used] [-mindelay t1] [-maxdelay t2] [-optfactor f]
voice -print
voice -priority [G723] [G711U] [G711A] [G729]

    -print      Display voice codec information and configuration.
    -send       Specify sending packet size.
                G.723 (30/60 ms)
                G.711U (20/40/60 ms)
                G.711A (20/40/60 ms)
                G.729 (20/40/60 ms)
    -priority   Priority preference of installed codecs.
                G.723
                G.711U
                G.711A
                G.729
    -volume     Specify the following levels:
                voice volume (0~63, default: 25),
                input gain (0~38, default: 25),
                dtmf volume (0~31, default: 23),
    -nscng      No sound compression and CNG. (G.723.1 only, On=1,
Off=0).
    -echo       Setting of echo canceller. (On=1, Off=0, per port basis).
    -mindelay   Setting of jitter buffer min delay. (0~150, default: 90).
    -maxdelay   Setting of jitter buffer max delay. (0~150, default:
150).
Example:
    voice -send g723 60 g711u 60 g711a 60 g729 60
    voice -volume voice 20 input 32 dtmf 27
    voice -echo 1
usr/config$
```

Figure 58. voice command list

Parameter Usages:

- print print current voice information and configurations.
- send to define packet size for each codec. 20/40/60ms means to send a voice packet per 20/40/60 milliseconds. The smaller the packet size, the shorter the delay time. If network is in good condition, smaller sending packet size is recommended. In this

parameter, 20/40/60ms is applicable to G.711u/a law, and G.729 codec, while 30/60ms is applicable to G.723.1 codec.

-priority codec priority while negotiating with other SIP device. This parameter determines the listed sequence in the media header of SDP body of SIP INVITE message. The codec listed in left side has the highest priority when both parties determining final codec. User can also select the particular codec without others.

```
usr/config$ usr/config$ voice -priority g723 (only select this codec)
usr/config$ voice -priority g723 g729 g711u g711a (select four codecs,
and g723 is the first choice)
```

-volume There are three adjustable values. **Voice volume** stands for volume, which can be heard by local side; **input gain** stands for volume, which the opposite party hears. **dtmf** volume stands for DTMF volume/level, which sends to its own Line1.

Note: Level of volume too high or too low may be result in bad performance while connecting to each other.

-nscng silence suppression and comfort noise generation setting (1 = ON; 0 = OFF). It is applicable to G.723 codec only. An example is demonstrated below:

```
usr/config$ voice -nscng g723 1
```

-mindelay the minimum jitter buffer size. (Default value= 90 ms)

-maxdelay the maximum jitter buffer size. (Default value= 150 ms)

```
usr/config$ voice -mindelay 90 -maxdelay 150 -optfactor 7
```

-echo activate each canceller (1 = ON; 0 = OFF).

-optfactor optimized factor. (Default value= 7).

An example is demonstrated below:

```
usr/config$ voice -mindelay 90 -maxdelay 150 -optfactor 7
```

Note: be sure to know well the application before you change voice parameters because this might cause incompatibility.


```
usr/config$ voice -print

Voice codec setting relate information
  Sending packet size :
    G.729A      : 40 ms
    G.723.1    : 60 ms
    G.711U     : 40 ms
    G.711A     : 40 ms
  Priority order codec :
    g729a g7231 g711u g711a
  Volume levels      :
    voice volume : 25
    input gain   : 25
    dtmf volume  : 23
  No sound compress & CNG :
    G.729A      : There is no setting
    G.723.1    : Off
    G.711(U-Law) : Off
    G.711(A-Law) : Off
  Echo canceller    : On
  Jitter buffer     :
    Min Delay    : 90
    Max Delay    : 150
usr/config$
```

Figure 59. voice -print command list

19.7.15 [support]

This command provides some extra functions that might be needed by users.

```
usr/config$ support

Special Voice function support manipulation
Usage:
support [-t38 enable]
support -print
  -t38      T.38 (FAX) enabled/disabled.
Example:
  support  -t38 1
usr/config$
```

Figure 60. support command list

Parameter Usages:

- print print current settings in support command.
- t38 to switch ON/OFF (1 = ON; 0 = OFF) T.38 fax ability. When T.38 ability is ON, SP5001/S will automatically defer codec (G.723 or G.729a) to T.38 when FAX signal is detected.

Note: it is not recommended to change the value in this command, only if users do know well the application. This might cause incompatibility with other devices.

```
usr/config$ support -print

Special Voice function support manipulation
  T.38(FAX) support : Disabled

usr/config$
```

Figure 61. support –print command list

19.7.16 [tos]

IP Packet ToS (type of Service)/Differentiated Service configuration.

```
usr/config$ tos

IP Packet ToS(type of Service)/Differentiated Service configuration
Usage:
tos [-rtptype dscp]
tos [-sigtype dscp]
tos -print
    [-rtpreliab mode]
tos -print

Example:
    tos -rtptype 7 -sigtype 0

usr/config$
```

Figure 62. tos command list

Parameter Usages:

- rtptype the packages of voice
- sigtype the package of call signal

Note: The value of rtptype and sigtype is from 0 to 63. It's working if it supported by your network.

```
usr/config$ tos -print

IP Packet ToS information:
Signalling Packet:
  DSCP Code      : 0
Media Packet:
  DSCP Code      : 0

usr/config$
```

Figure 63. tos –print command list

19.7.17 [phone]

The progress tone of SP5001/S is configurable. Default tone value is set according to U.S. tone specification. Users may adjust the values according to their own country's tone specification or users-defined tone specification.

```
usr/config$ phone

Phone ringing , ringback tone , busy tone , dial tone setting and notes
Usage:

phone [-ring [freq ] [ringON ] [ringOFF ] [ringLevel]]
      [-rbt [freqHi ] [freqLo ] [freqHiLev] [freqLoLev]
          [Tone1ON] [Tone1OFF] [Tone2ON ] [Tone2OFF ]]
      [-bt [freqHi ] [freqLo ] [freqHiLev] [freqLoLev]
          [Tone1ON] [Tone1OFF] [Tone2ON ] [Tone2OFF ]]
      [-dt [freqHi ] [freqLo ] [freqHiLev] [freqLoLev]
          [Tone1ON] [Tone1OFF] [Tone2ON ] [Tone2OFF ]]
      [-flash [freqLo ] [freqHi ]]
      [-level [loopCurrentLevel] [onhookLineVoltageLevel ]]
phone [-print [ring]|[rbt]|[bt]|[dt]|[flash]]

    -print  Display phone ringing/tone configuration.
           ring :   ringing
           rbt  :   ringback tone
           bt   :   busy tone
           dt   :   dial tone
           flash:  flash tone
    -ring   ringing configuration set .
    -rbt    ringback tone configuration set.
    -bt     busy tone configuration set.
    -dt     dial tone configuration set.
    -flash  flash configuration set .
    -level  Loop Current and On-Hook Line Voltage level set .

Note:
ringing frequency   : 15 ~ 100   (Unit : Hz)
ringing ring ON/OFF : 0 ~ 8000  (Unit : ms)
ringing level       : 0 ~ 94    (Unit : V)
tone frequency      : 0 ~ 65535 (Unit : Hz)
tone freqLevel      : 0 ~ 65535 (Unit : mVrms)
tone Tone ON/OFF    : 0 ~ 8000  (Unit : ms)
level loopCurrent    : 0 ~ 7     (20mA ~ 41mA, Step : 3mA)
level OnHookVol     : 0 ~ 63    ( 0V ~ 94.5V, Step : 1.5V)

Example:
phone -print rbt
phone -ring 20 2000 4000 94
phone -rbt 480 440 125 105 2000 4000 2000 4000
phone -bt 620 480 125 105 500 500 500 500
phone -dt 440 350 96 96 8000 0 8000 0
phone -flash 400 800
phone -level 1 32

usr/config$
```

Figure 64. phone command list

Parameter Usages:

-print print current call progress tone configurations (ring: ring tone, rbt: ring back tone, bt: busy tone, dt: dial tone). This parameter should be accompanied with tone type. For example:

```
usr/config$ phone -print rbt

Phone ringback tone parameter
  Ringback Tone frequency high      : 480
  Ringback Tone frequency low       : 440
  Ringback Tone frequency high level : 155
  Ringback Tone frequency low level  : 155
  Ringback Tone tone1 on            : 2000
  Ringback Tone tone1 off           : 4000
  Ringback Tone tone2 on            : 2000
  Ringback Tone tone2 off           : 4000
usr/config$
```

Figure 65. phone -print rbt command list

Note:

For tone simulation, SP5001/S adopts dual frequencies as traditional telephone does. If users want to have their own call progress tone, they can change the value of tones. High and Low frequency/level/cadence can be configured respectively.

- ring** to set RING tone value.
The played tone type, when SP5001/S is receiving a call.
- rbt** to set RingBackTone value
The played tone type, when SP5001/S receives a Q.931 Alerting message. In condition that SP5001/S is the originating side.
- bt** to set BusyTone value.
The played tone type, when destination is busy.
- dt** to set DialTone value.
The played tone type, when hook off a phone set of workable SP5001/S.
- flash** set the detective flash range in ms, for example, 300-500 ms.

19.7.18 [rom]

ROM file information and firmware upgrade function.

```
usr/config$ rom

ROM files updating commands
Usage:
rom [-print] [-app] [-boot] [-dsptest] [-dspcore] [-dspapp]
  -s TFTP/FTP server ip -f filename
rom -print
  -print      show versions of rom files. (optional)
  -app        update main application code(optional)
  -boot       update main boot code(optional)
  -boot2m     update 2M code(optional)
  -dsptest    update DSP testing code(optional)
  -dspcore    update DSP kernel code(optional)
  -dspapp     update DSP application code(optional)
  -s          IP address of TFTP/FTP server (mandatory)
  -f          file name(mandatory)
  -method     download via TFTP/FTP (TFTP: mode=0, FTP: mode=1)
  -ftp        specify username and password for FTP
Note:
  This command can run select one option in 'app', 'boot',
  'dsptest', 'dspcore', and 'dspapp'.
Example:
  rom -method 1
  rom -ftp vwusr vwusr
  rom -app -s 192.168.4.101 -f app.bin

usr/config$
```

Figure 66. rom command list

Parameter Usages:

-print show versions of all rom files
-app, boot, boot2m, dsptest, dspcore, dspapp to update main Application program code, Boot code, DSP testing code, DSP kernel code, or DSP application code.

Most of all, the Rom file needed to get upgrade is App or Boot2m. Please check the exactly Rom file before doing download procedure.

-s to specify TFTP server' s IP address when upgrading ROM files.
-f to specify the target file name, which will replace the old one.
-method to decide using TFTP or FTP as file transfer server. "0" stands for TFTP, while "1" stands for FTP.
-ftp if users choose FTP in above item, it is necessary to specify pre-defined username and password when upgrading files.

```

usr/config$ rom -print

Download Method : TFTP
  Hardware Ver. : 3.0b
    Boot Rom : sdboot.200
Application Rom : 4asipfxs.106
  DSP App : 48302ce3.140
  DSP Kernel : 48302ck.140
  DSP Test Code : 483cbit.bin
usr/config$

```

Figure 67. rom –print command list

19.7.19 [passwd]

For security concern, users have to input the password before entering configuration mode. “passwd” command is for password setting purpose.

```

usr/config$ passwd

Password setting information and configuration
Usage:
  passwd -set Loginname Password
  passwd -clean
Note:
  1. Loginname can be only 'root' or 'administrator'
  2. passwd -clean will clear all passwd stored in flash,
     please use it with care.
Example:
  passwd -set root Your_Password_Setting
usr/config$

```

Figure 68. passwd command list

Parameter Usages:

passwd <login name> <password>

Note: <login name> can be “root” or “administrator” only. “root” and “administrator” have the same authorization, except commands that can be executed by “root” only – “passwd –set root”, “rom –boot”, “room-boot2m” and “flash –clean”.